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To be

Vol. XVII., No. 7

NOVEMBER, 1916

\$2.00 per Year

April, 1917

INDUSTRIAL CANADA



Selling Men's Clothing BY MAIL

For the past six years we have had the pleasure of being retained as advertising counsel and Canadian Managers for Messrs. Catesbys Limited, of Tottenham Court Road, London, Britain's Largest Mail Order Clothing Establishment.

The advertising has been entirely of a mail order character. Results only count. We have been very successful with the development of this business and can show figures to prove it.

If you are interested in starting a mail order advertising campaign, write to us. We can help you.

J. J. GIBBONS, LIMITED

General Advertising Agents

MONTREAL
Cables—Gibjay, Toronto

Head Office :
TORONTO

WINNIPEG
Codes—Liebers, ABC, 5th Edition

245906
16:4:30

**PUBLISHED BY THE CANADIAN
MANUFACTURERS ASSOCIATION** INCORPORATED.

HEAD OFFICE BRANCH OFFICES,
• TORONTO • MONTREAL, HAMILTON, WINNIPEG, VANCOUVER, HALIFAX, QUEBEC.

STEEL BARS

ROUNDS, SQUARES, FLATS, ANGLES AND SPECIAL
SECTIONS FOR AGRICULTURAL IMPLEMENTS

Prompt Shipment from Stock

BURLINGTON STEEL COMPANY, LIMITED
HAMILTON ONTARIO

AUTOMOBILE PARTS

DROP FORGINGS



HC
111
I 4
V. 17
no. 7-12

We have erected and are now operating

THE LARGEST COMMERCIAL DROP FORGE PLANT IN CANADA

We are equipped to handle large forging contracts.
This expansion also increases our stamping facilities.
We stand by our Motto: Quality and Service.

SHEET METAL WORK

GENERAL STAMPINGS

DOMINION FORGE & STAMPING CO., LIMITED
Walkerville - Ontario

"PEERLESS" GASOLENE

Superior quality, differs from all others, gives greatest mileage. Sold in Tank Cars, Drums, and Barrels, also by Tank Wagon.

BRITISH MOTOR GASOLENE

Not equal to Peerless in volatility or staying powers, but so good that many customers never ask for better. Sold in Tank Cars, Drums and Barrels, also by Tank Wagon.

FORD MOTOR OIL

A Lubricant perfect in all its requirements for use in all Ford Cars. Sold in Barrels, ½ Barrels, Cans and Tins. Special Lithographed Tins made to go under seat of Cars.

"AUTOLENE"

Very highest quality non-carbonizing, cold-proof Motor Oil, made in light, medium and heavy grades for all cars. Sold in Barrels, ½ Barrels, Cans and Lithographed Tins.

VULCAN BENZINE

Sold in Tank Cars and Barrels.

LAMP OILS

"Venango Special," "Electrolene," "Lampolene," and "Petrolene." All these burning oils are of great merit. Sold in Tank Cars and Barrels (Car Loads or Less), also by Tank Wagon.

VULCAN LUBRICATING OILS

Cylinder, Engine, Machine, Dynamo, etc., for all makes of Motors, Steam and Electric plants. Sold in Tank Cars, Barrels, ½ Barrels, Cans and Lithographed Tins.

VULCAN GREASES

For all purposes. Sold in Barrels, ½ Barrels, and Lithographed Pails and Tins.

BRITISH METAL POLISH

Sold in Cans and Lithographed Tins, all sizes.

VULCAN ASPHALTIC ROAD OILS

Eminently satisfactory. In three grades. Sold in Tank Cars and Barrels.

**FUEL OIL, PARAFFINE WAX,
PETROLEUM COKE, Etc.**

THE BRITISH AMERICAN OIL CO., LIMITED

Refiners: Foot of Cherry Street, Toronto

HEAD OFFICE: ROYAL BANK BUILDING, TORONTO

BRANCHES: MONTREAL

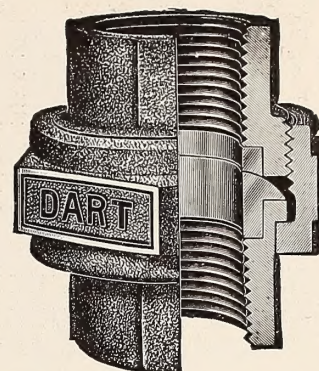
OTTAWA

LONDON

WINDSOR, Etc.

There is no sidestepping the
efficiency of

DART UNION PIPE COUPLINGS



They give you true service at a fraction
of the old costs. Your dealer sells them.

DART UNION CO., Limited, Toronto

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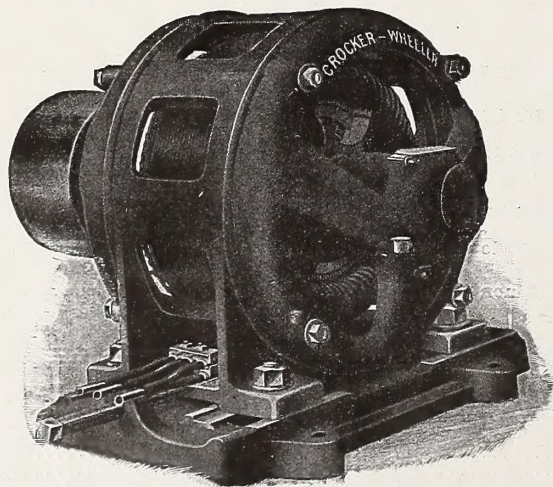
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THE DESIGN OF CROCKER-WHEELER INDUCTION MOTORS

INCLUDES:

Heavy Shafts

Large Journals

High Power Factor

Excellent Efficiency

They have many other desirable features;

Bulletin 155 describes them.

THE CANADIAN CROCKER-WHEELER CO., Limited

MANUFACTURERS AND ELECTRICAL ENGINEERS

Head Office and Works: St. Catharines

District Offices: Montreal, Toronto, Vancouver

*Made in Canada***The All-
Canadian
Factory
Time
Saver**

THE PRESTO-PHONE

Saves Time and Money

Every factory where a general manager supervises various departments can effect a real saving of time and trouble by installing a Presto-Phone Factory Telephone System.

It's Automatic

No central operator needed. At any moment an executive head can get instant and exclusive communication with any department. No bother, no fuss, no waiting, no interruption. The whole plant at his "finger ends."

This is a distinctly **Canadian** system—invented and made right here in Canada and actually, by the practical test of every-day usage, without an equal anywhere.

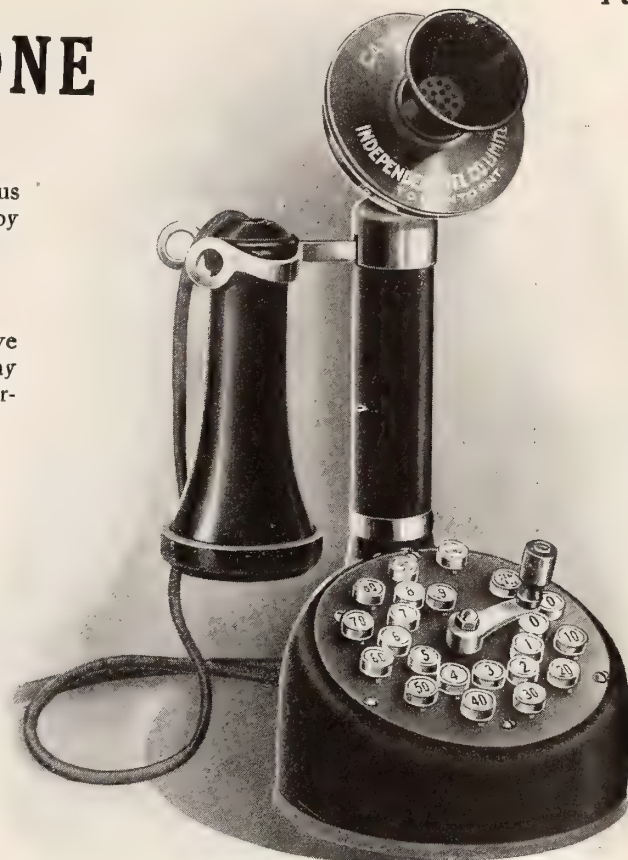
Send for Booklet

A line on your business stationery will bring it by return mail. You ought to be acquainted with this great time-saving factory telephone system. Tell your stenographer to write us for the booklet to-day.

Canadian Independent Telephone Co., Limited

263 Adelaide St. West

TORONTO



A PRESTO-PHONE DESK SET

The DUNHAM

VACUUM HEATING SYSTEM

Using

DUNHAM RADIATOR STEAM TRAPS



William Neilson Ltd., Toronto. Dunham System of Heating.

Ask for full information and list of Installations in Canada.

has an enviable record of high-class installations where Heating Satisfaction and Comfort prevails.

Least attention in operation—low fuel and upkeep cost and being "always on the job" combine to make "Dunham Heating" the most desirable.

For Factory—Office—Apartment or Store and Residence heating there is a Dunham System which will do it right.

C. A. DUNHAM CO., Limited, Toronto, Canada

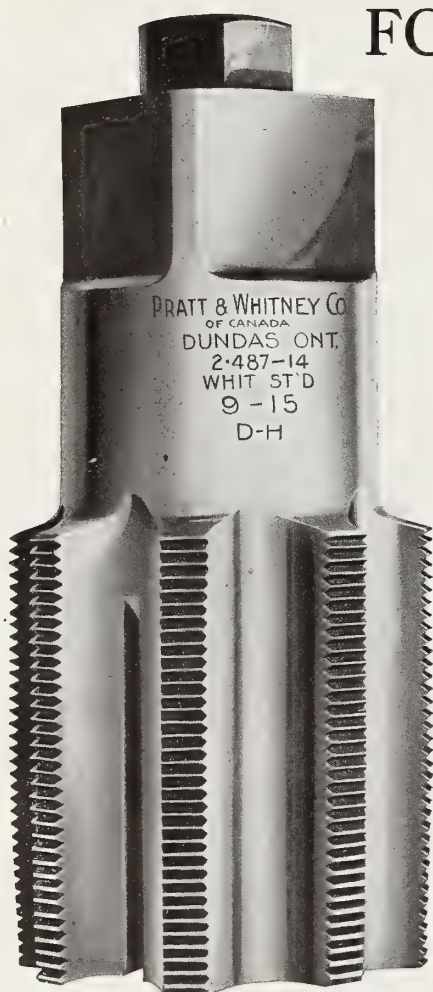
OTTAWA—214 Booth Building
MONTREAL—Room 20, 11 St. Sacrament Street

HALIFAX—Eagar, Coombs & Co., Ltd., McCurdy Building
VANCOUVER—520 Duncan Building

WINNIPEG—405 Tribune Building

ADJUSTABLE TAPS

FOR Shrapnel and H.E. Shells



ON hard, tough shell steel, solid taps are too expensive as the excessive wear quickly puts them below gauge size.

The simple adjustment on the tap, shown in our cut, was gotten out to overcome the effect of this excessive wear and to provide an economical substitute for the expensive chaser tap.

The accuracy to size and form is easily maintained and the life of the tool prolonged far beyond that of a solid tap at a comparatively small advance in price.

We can supply them for all tapping operations on Shrapnel and H.E. shells to 4.5" diameter.

Ask for our list and prices of Shell Tools
Reamers, Taps, Dies, Cutters

If you have not received our No. 8 catalogue yet, we have one for you.

PRATT & WHITNEY CO.
of Canada, Limited
Dundas : Ontario

MONTREAL
723 Drummond Bldg.

WINNIPEG
1205 McArthur Bldg.

VANCOUVER
609 Bank of Ottawa Bldg.



LATHES and Attachments

for the manufacture of—

This Equipment is
all New, Modern
and Heavy

Write or wire our
nearest office for
particulars

EARLY DELIVERY

**6", 8"
and
9.2
HIGH
EXPLOSIVE
SHELLS**

**THE JOHN BERTRAM & SONS CO.
LIMITED**

DUNDAS, ONTARIO, CANADA

MONTREAL
723 Drummond Bldg.

VANCOUVER
609 Bank of Ottawa Bldg.

WINNIPEG
1205 McArthur Bldg.





Ready to Glue—Without Further Preparation

That's the way core stock comes from the Yates Type G-2 Edging and Jointing Saw. Smooth enough and true enough to glue at once. Saves the cost of an extra run through a jointer—money you can count right into your pocketbook. Prepares your stock for rough gluing three times as fast as it can be done on a hand jointer, and at a fraction of the cost.

The Type G-2 can be used for all kinds of edging

and ripping. The saw line is kept perfectly straight, automatically permitting operation along the very edge of bad or shaky spots without danger to saw, stock or operator. It is particularly adapted to the salvage of usable portions of low grade stock. Although before the trade but a short time the Type G-2 has dozens of well-satisfied users, some of whom have installed additional saws like the first.

We have a circular describing and illustrating this new saw, and its operation. Sent free without obligation or expense of any kind.

P. B. Yates Machine Co. Ltd.

HAMILTON, ONT. CANADA

U.S. Plant—BELOIT, WIS.

BUILD
TRUS-CON SYSTEM
 REINFORCED CONCRETE
 FIREPROOF, MAXIMUM DAYLIGHT



McCormick Manufacturing Co., London, Ont.
 Canadian Frost & Winchester, Contractors

Watt and Blackwell, Architects

Entire construction Trus-Con System Reinforced Concrete
 All windows Trus-Con Steel Sash

Trus-Con Products Embrace :

TRUSSED BARS, RIB BARS, RIB METAL, HYRIB, TRUS-CON LATH

Trus-Con Steel Sash Ideal for Factories, Warehouses, Powerhouses, Etc.,
 being Fireproof, Waterproof and Durable

Write for Descriptive Catalogues

**Trussed Concrete Steel Co.
 of Canada, Limited**

Head Office and Works: WALKERVILLE, ONT.

Montreal

Toronto

BRANCHES:
 Winnipeg

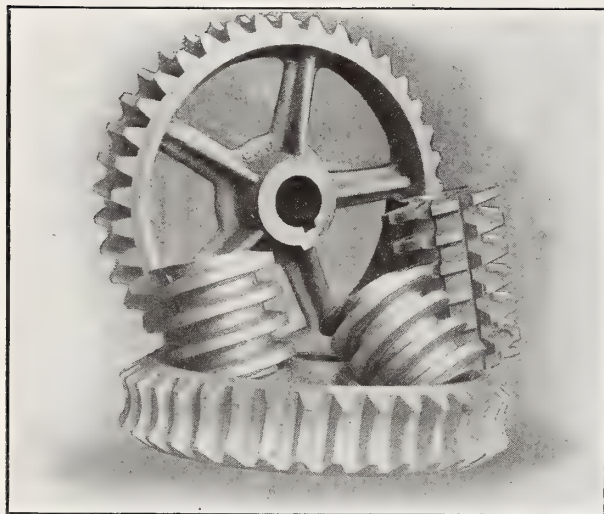
Calgary

Vancouver



CUT GEARS

CUT
GEARS



Worms and Worm Gears with Hob.

The only Gear Shop
in Canada for Specialized
Work in a large
range of sizes.

Write for Quotations.

**Hamilton Gear &
Machine Co.**

COR. CONCORD
& VAN HORNE

TORONTO

Polarine

65% of the depreciation of the average car is preventable by the use of a good lubricant.

Polarine prevents *preventable* wear and tear. It lubricates efficiently under all conditions and deposits a minimum of carbon.

THE IMPERIAL OIL COMPANY
Limited

BRANCHES IN ALL CITIES

T. 212

MADE-IN-CANADA

Toronto, Ontario

Mr. Manufacturer:—

Are you sincere in your desire to boost and make greater the British Empire by the buying of Canadian made goods? If so, look over the following list of high-grade oils, greases, compounds and paints manufactured in our oil refinery at Petrolia and our paint works at Toronto, Ontario. A postal card from you will bring you full information regarding the goods in which you are interested.

CYLINDER OIL

ENGINE OIL

MACHINE OIL

DYNAMO OIL

TANNER'S OIL

BLACK
LEATHER OIL

PARAFFINE
WAX

MINERAL
SOAP STOCK

BENZINE



WHITE LEAD

READY MIXED
PAINT

COLORS IN
OIL

VARNISHES

BLACK
JAPANS

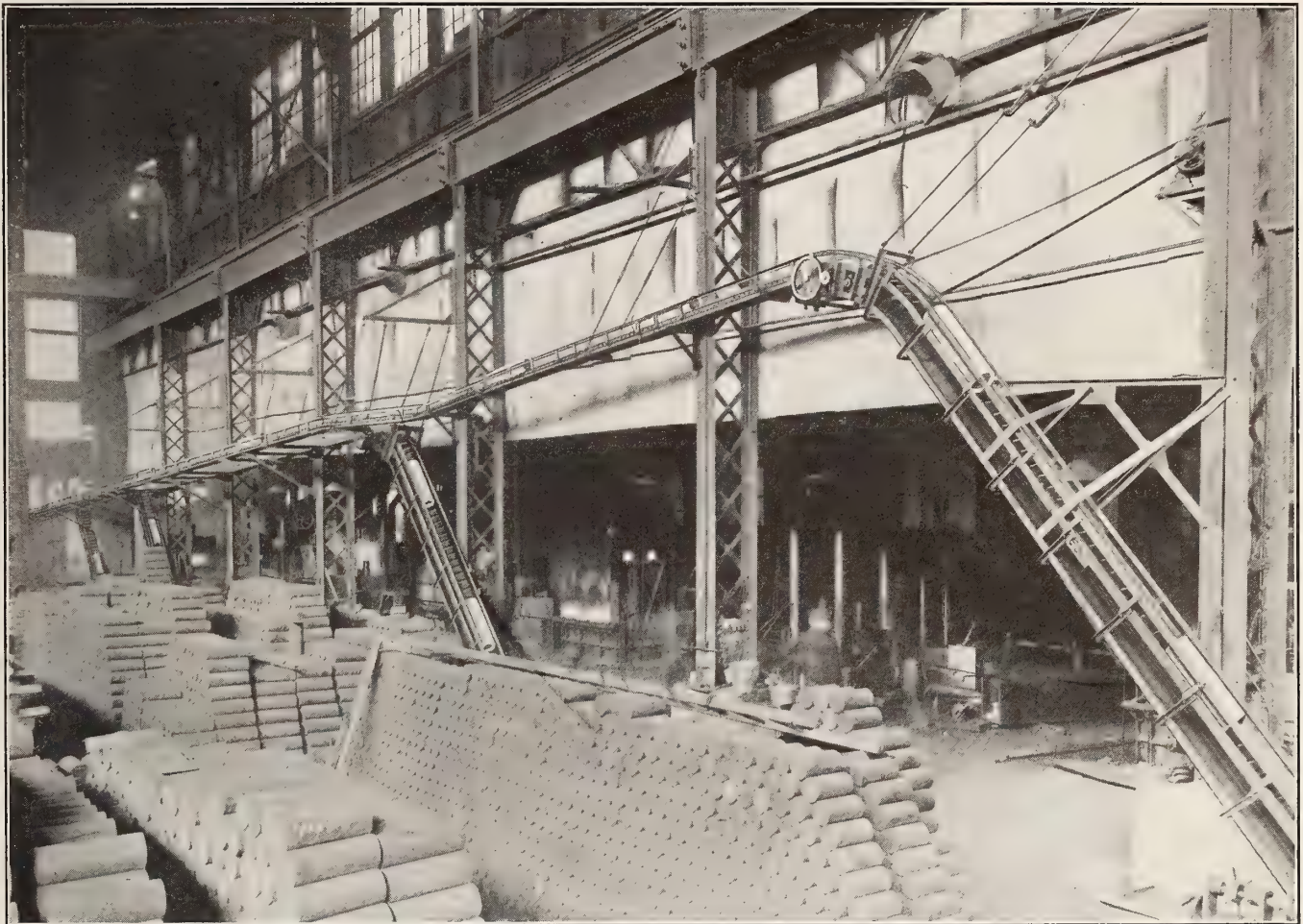
STEEL BRIDGE
PAINTS

ROOFING
PAINTS

CUP GREASE

LINSEED OIL
SOAP

ATTENTION, MANUFACTURERS



Shell Conveyor Device in Plant of P. Lyall & Sons Construction Co., Montreal

¶ The scarcity of labor deals directly with the manufacturer.

¶ The manufacture of any product fails to become attractive when the labor cost increases the production cost to an extent that you have nothing left for your capital invested.

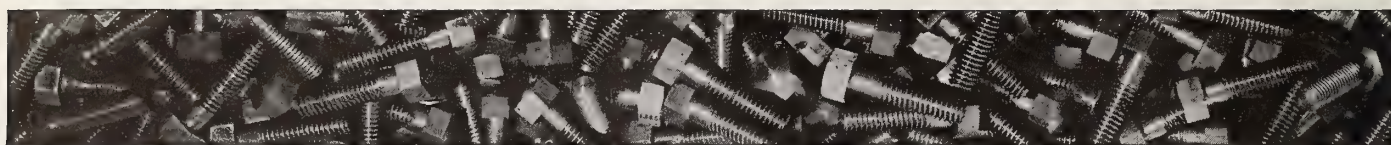
¶ This not only applies to the manufacture of shells, but it applies to the man who has a Billet or Forging contract.

¶ It also applies to the handling of boxes in process of manufacture and after finishing. It applies to any manufacturer of whatever line, as we design special carriers for any product, such as barrels, drums, lumber, brick, pig iron, bars of iron and tubing.

¶ We shall be pleased to make an estimate of cost and submit plans and specifications without obligating you in any way, if you will write us of your proposition.

Write for our catalogue

Canadian Mathews Gravity Carrier Co., Ltd.
484 Richmond St. W., Toronto



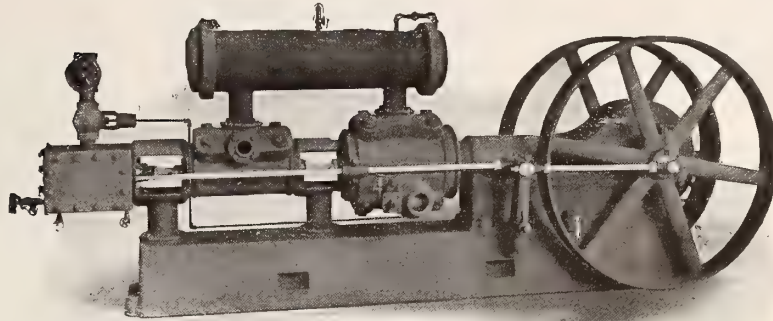
THE NATIONAL-ACME Manufacturing Company

Makers of Screws, Nuts,
Studs and Hexagon
Brass Nuts in Standard
threads and sizes. Also
Special Screw Machine
Work from Iron, Steel
and Brass Bars up to $2\frac{1}{4}$ "
diameter and $10\frac{1}{2}$ " long at

MONTREAL, P.Q.
De Courcelles & G.T.R., St. Henri



"Maximum Power at Minimum Cost"



ECONOMY OF POWER

is one of the most vital points to be considered in the purchase of an air compressor. The average small plant has none too much room to spare, but wants all the power it can get in a limited space.

INGERSOLL-RAND CLASSES "EL" AND "FL"

take up little floor space but every horse power of energy applied returns a higher value in compressed air than in any other types within their range of sizes.

Write for any information.

CANADIAN INGERSOLL-RAND CO., Limited

COMMERCIAL UNION BUILDING, MONTREAL, CANADA

Works : SHERBROOKE, QUE.

Sydney

Toronto

Cobalt

Timmins

Winnipeg

Nelson

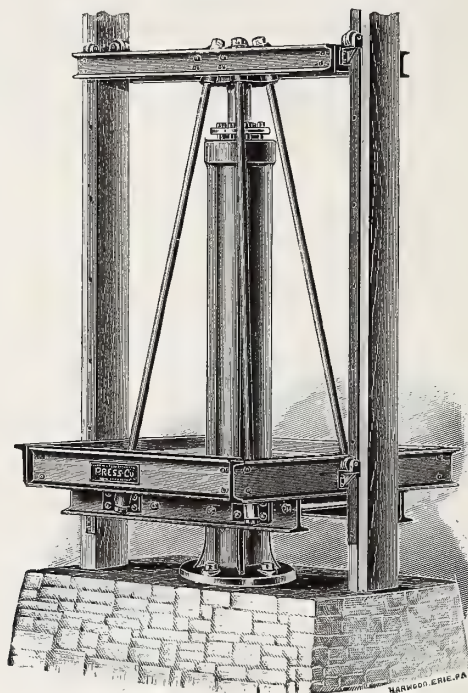
Vancouver

HYDRAULIC PUMPS and ACCUMULATORS

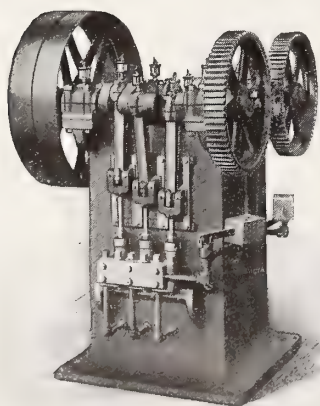
All Sizes and Styles

Accumulators
up to 18" x 15'

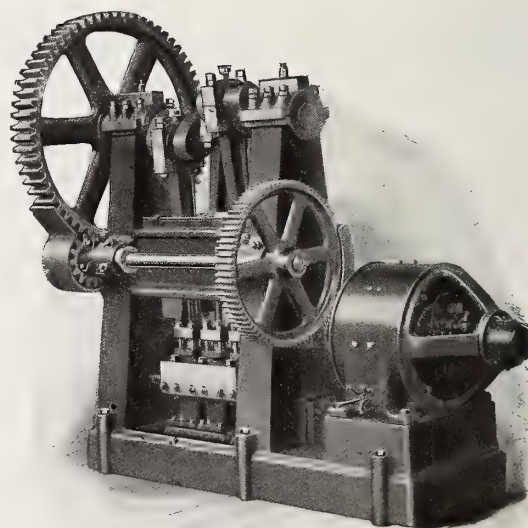
All
pressures



Pumps up to
100-gallon
capacity



Any
pressure
desired



Canadian Boomer & Boschert Press Co., Limited
18 Tansley St. Cable Address : Pressco MONTREAL



The Ever Widening Circle of NATIONAL TRUCK OWNERS

is the best evidence that the National has made good with motorwise Truck Buyers.

The National Service plan is unique in its completeness. Ask for details.

FIVE MODELS — 1500 — 2000 — 3000—4000—7500 LBS. CAPACITIES

The National Catalogue is a compilation of Motor Truck facts. Send for a copy for your personal use.

THE NATIONAL STEEL CAR CO., LIMITED

Montreal Office:
SHAUGHNESSY BLDG.

Works and Operating Offices:
HAMILTON, CANADA

F DU PONT FABRIKOID

REG. U. S. PAT. OFF.

IS A MADE-IN-CANADA
Leather Substitute
Guaranteed Superior to Coated Splits

FOR AUTOMOBILES

FABRIKOID, MOTOR QUALITY, is the standardized upholstery material now used by many of the largest makers of automobiles.

RAYNTITE TOP MATERIALS are rain-proof and guaranteed not to leak for one year, but will last the life of the car.

FOR UPHOLSTERING

FABRIKOID, CRAFTSMAN QUALITY, has the luxurious appearance of leather and is more durable than that made and sold as "genuine" leather.

Special grades for novelty, stationery and bookbinding requirements and for vehicle and railway car upholstery.

TELL US WHAT YOU MAKE, AND WE WILL
SEND SAMPLES AND PRICES

DU PONT FABRIKOID CO.
World's Largest Producers of Leather Substitutes
TORONTO, ONTARIO

The 1917 Ford Coupelet

A Stylish Utility Car

AN especially desirable car for doctors and business men, who want a comfortable closed car that can be turned into an open one in two minutes. A great favorite with women who desire an all-weather car for social or shopping occasions.

Note the new stream-line effect, tapered hood, crown fenders, and larger radiator giving greater cooling surface.

Chassis	-	\$450	Coupelet	\$695
Runabout		475	Town Car	780
Touring Car		495	Sedan	- 890

f.o.b. Ford, Ontario

**Ford Motor Company
of Canada,
Limited**
Ford, Ontario

Assembly and Service Branches at St. John, N.B.; Montreal, Que.; Toronto, Ont.; Hamilton, Ont.; London, Ont.; Winnipeg, Man.; Saskatoon, Sask.; Calgary, Alta.; Vancouver, B.C.

Overland

TRADE MARK REG.

FOUR SIX
\$1115 \$1295

Model 85-4 F.o.b. TORONTO.

Model 85-6 F.o.b. TORONTO.



Model 85-4

35 horsepower en bloc motor
112-inch wheelbase
32 x 4-inch tires; non-skid rear
Cant-lever rear springs
Auto-Lite starting and lighting

Vacuum tank fuel feed
Gasoline tank in rear with gauge
Electric control switches on
steering column

Model 85-6

35-40 horsepower en bloc motor
116-inch wheelbase
32 x 4-inch tires; non-skid rear
Cant-lever rear springs
Auto-Lite starting and lighting

Vacuum tank fuel feed
Gasoline tank in rear with gauge
Electric control switches on
steering column.

Willys-Overland, Limited
Head Office and Works, West Toronto, Canada

Never Before So Big and Fine a Car at So Low a Price

A good, big, luxurious car, perfectly appointed, completely equipped—for \$1115.

Never before has it been possible for anyone to sell so big and fine and well finished a car for any such price.

No one ever before built enough such cars to get costs low enough to make such value possible.

But increased Overland production has done the trick—and here it is.

A 112-inch wheelbase four with cantilever springs and 4-inch tires, the easiest riding car that ever sold for so low a price—\$1115.

It has the motor that drives more automobiles than any other motor of its power ever designed—

The famous Overland 35-horsepower motor—now at the height of its development—more than a quarter of a million in use.

It has the reliable vacuum tank fuel feed with gasoline tank in the rear.

It is a finished, workmanlike body job, straight through from stem to stern.

From its one man top, right down to the linoleum covered floor boards of the front compartment and the richly carpeted tonneau, every detail is complete.

You ought to own one of these cars.

It represents the utmost value. You can't beat—or even equal it at anywhere near the price.

Order one to-day and enrich your life and the lives of every member of your family with the freedom and wider activity made possible by such a car.

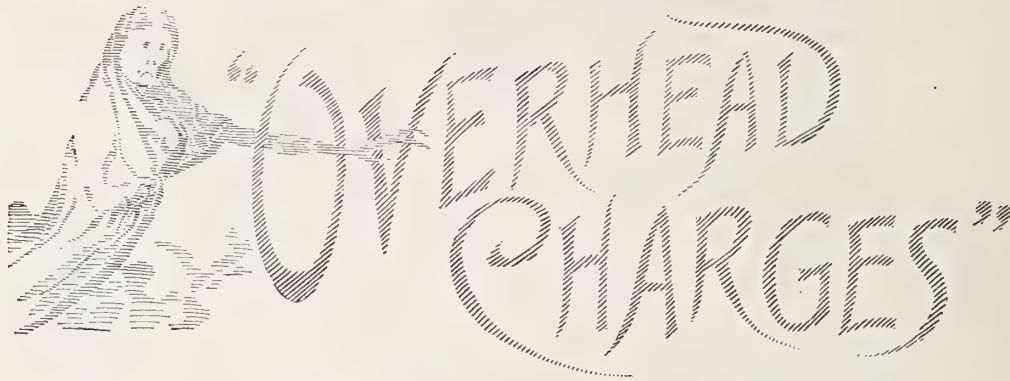
Same model, six cylinder—35-40 horsepower—116-inch wheelbase, \$1295.

Overland dealers everywhere.

Catalog on request. Please address Dept. 783.

Willys-Overland, Limited
Head Office and Works, West Toronto, Canada

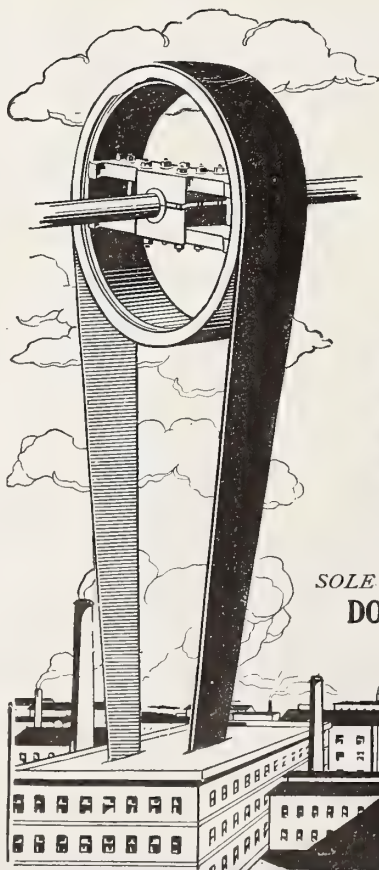
That grim spectre—



RELENTLESS and ever present in Factory operation is the spectre of Overhead Charges.

Its ravages among the profits of your business must be constantly checked. One of its most active lieutenants is *Power Wastage*—caused by belt slippage over metal pulleys. Many thousands of dollars are wasted yearly in Canadian Factories and workshops where Wood Pulleys would save 50% of the waste.

Actual scientific tests show that on the average you can buy *four* Dodge Wood Split Pulleys with the money you now lose by waste from one Metal Pulley. Therefore we appeal to Presidents of Companies, Managers and Superintendents of Factories, Engineers and others, to personally supervise the buying of their pulleys and specify always—



DODGE

WOOD SPLIT PULLEYS

SOLE MAKERS:

DODGE MANUFACTURING CO. Limited, TORONTO



Positive Protection for Priceless Papers

WHICH is the more valuable—your petty cash or your records (orders, correspondence, vouchers, sales recapitulation, etc.)?

You put your petty cash in the vault or the safe at night, but what do you do with those valuable business records which could never be replaced if destroyed?

If they are wheeled into the vault, they are alright, but if the vault space is small and crowded, or you lack facilities altogether, think what a convenience it would be to have a fireproof depository—this Office Specialty Record Safe—right in your office. You would have all your records right at hand during the day, and at night when you leave the office, you can lock them up, and go home in full confidence that they are **secure** in every respect.

Made in Canada



The Office Specialty Record Safe is soundly constructed and has all the elements of Security without being ponderously heavy. Standard Width Office Specialty Filing Sections in any combination may be fitted inside.

You'll be interested in particulars of this Record Safe. Use the coupon below and send in your request for this information to-day.



Largest Makers of Filing Devices in the British Empire

Head Office and Factories : NEWMARKET, ONT.

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Clip and mail this coupon.

THE OFFICE SPECIALTY MFG. CO., Limited

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Canadian Manufacturers using the best kind of Stationery specify

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Ask your Printer to show you our selection of Bond, Writing and Ledger Papers. There is a line for every use, each one being the best in its class.

WE RECOMMEND

Superfine Linen Record

for your correspondence stationery.

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HAWKESBURY "IMPERVIOUS
SPRUCE" SHEATHING in 36 and
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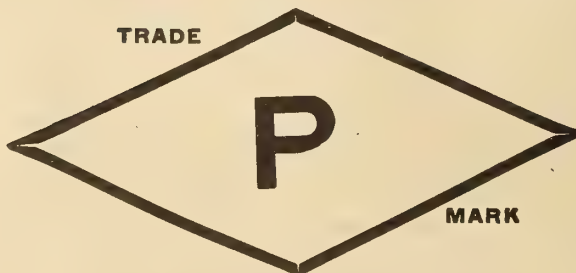
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CANADIAN

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The Edward Partington Pulp and Paper Co.

ST. JOHN, N.B., CANADA

EUROPEAN AGENTS :

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MANCHESTER, ENGLAND



Hold Up Your Stationery to the Light

and see that it contains this

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It is your guarantee for

QUALITY

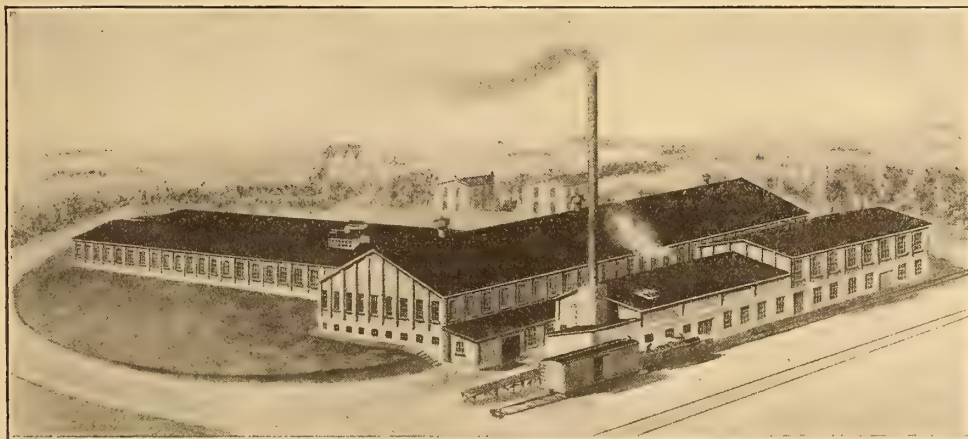
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Coating Mill, Barber Division, Georgetown, Ont.

The Largest and Best Equipped Mill in Canada for
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“Maple Leaf” “Beaver” “C.A.” Coated

Insist on these Brands being used in your Catalogue

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Manufacturers of

ACCOUNT BOOKS

Loose Leaf Ledgers, Binders, etc.
Leather Goods, Diaries, Paper,
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H. A. CLARK, Toronto
MISS M. CARLYLE, Toronto
W. S. FORSTER, Ottawa
A. W. HOLMES, Toronto
ROBT. HUNGERFORD, Toronto
FRED KELLOND, Hamilton
S. J. MALLION, Stratford
MRS. A. BROWN-REDDICK, Toronto
H. J. TUTT, Toronto

Persons having business with any of the Inspectors should communicate
with them at the Parliament Bldgs., Toronto.

Phone Main 5800 HON. JAS. S. DUFF,
Minister of Agriculture.

NOTICE

TO STATIONARY AND HOISTING ENGINEERS

Everyone operating a STATIONARY steam plant of 50 h.p. or over in the Province of Ontario must hold a Stationary Engineer's Certificate from the Board of Stationary and Hoisting Engineers. Anyone operating such a plant without a Certificate is liable to the penalties set forth in the Stationary and Hoisting Engineers' Act.

Everyone operating a HOISTING steam plant working at a pressure of 20 pounds or over irrespective of horse power, and used for hoisting in structural operations or excavating purposes, in the Province of Ontario, must hold a Hoisting Engineer's Certificate from the Board of Stationary and Hoisting Engineers. Anyone operating such a plant without a Certificate is liable to the penalties set forth in the Stationary and Hoisting Engineers' Act.

Application forms for obtaining STATIONARY or HOISTING Engineers' Certificates, may be had upon applying to the Chairman.

HON. F. G. MACDIARMID, W. C. MCGHIE,
Minister of Public Works and Highways. Chairman of Board.

To Investors

THOSE WHO, FROM TIME TO TIME, HAVE FUNDS REQUIRING INVESTMENT, MAY PURCHASE AT PAR

DOMINION OF CANADA DEBENTURE STOCK

IN SUMS OF \$500 OR ANY MULTIPLE THEREOF.

Principal repayable 1st October, 1919.

Interest payable half-yearly, 1st April and 1st October by cheque (free of exchange at any chartered Bank in Canada) at the rate of five per cent per annum from the date of purchase.

Holders of this stock will have the privilege of surrendering at par and accrued interest, as the equivalent of cash, in payment of any allotment made under any future war loan issue in Canada other than an issue of Treasury Bills or other like short date security.

Proceeds of this stock are for war purposes only.

A commission of one-quarter of one per cent will be allowed to recognized bond and stock brokers on allotments made in respect of applications for this stock which bear their stamp.

For application forms apply to the Deputy Minister of Finance, Ottawa.

DEPARTMENT OF FINANCE, OTTAWA,
OCTOBER 7th, 1916.

H. & D. Corrugated and Solid Fibre Board



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AND
ORDERLY
PLACE TO
KEEP
THEIR
CLOTHING**



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WILL
TELL YOU
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THESE
LOCKERS**

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An installation of 700 NO. 2124—MEADOWS FACTORY LOCKERS

The GEO. B. MEADOWS, Toronto, Wire, Iron and Brass Works
479 West Wellington St. Company, Limited TORONTO, CANADA

THE ROYAL BANK OF CANADA

Incorporated 1869

Capital Authorized.....\$25,000,000
Capital Paid Up.....\$11,820,000
Reserve & Undivided Profits..\$13,236,000
Total Assets.....\$235,000,000

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W. B. Torrance, Superintendent of Branches

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JOHN AIRD
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H. V. F. JONES
Ass't General Manager

CAPITAL PAID-UP, \$15,000,000
RESERVE FUND, \$13,500,000

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The Bank will make enquiries into the possibilities and requirements of markets abroad for exporters or importers who desire to extend their trade with British colonies or possessions. Owing to the large number of its correspondents and agents it has unusual facilities for this work.

S 57

ESTABLISHED 1875

IMPERIAL BANK OF CANADA

CAPITAL PAID UP \$7,000,000 RESERVE FUND \$7,000,000
PELEG HOWLAND, PRESIDENT E. HAY, GENERAL MANAGER

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THIS bank offers particularly good facilities in the handling of the banking requirements of Exporters. Its strong, foreign connections guarantee the most efficient service.

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IRELAND—The Bank of Ireland, Dublin, and Branches

AGENTS IN FRANCE

Lloyd's Bank, Limited

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CHICAGO—First National Bank BUFFALO—Bank of Buffalo
DETROIT—Old Detroit National Bank
SAN FRANCISCO—Wells Fargo Nevada National Bank
and in all other principal centres

THE BANK OF BRITISH NORTH AMERICA

Established in 1836

Incorporated by Royal Charter in 1840

Paid-up Capital.....\$4,866,666.66
Reserve Fund.....\$3,017,333.33

Head Office—5 GRACECHURCH STREET, LONDON

HEAD OFFICE IN CANADA—
St. James Street, MONTREAL

H. B. MACKENZIE, General Manager

Advisory Committee in Montreal

SIR HERBERT B. AMES, M.P.

W. R. MILLER, Esq.

W. R. MACINNES, Esq.

This Bank has Branches in all the principal Cities of Canada, including Dawson, (Y.T.), and Agencies at New York and San Francisco in the United States. Agents and Correspondents in every part of the world.

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Drafts, Money Orders, Circular Letters of Credit and
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in all parts of the world.

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MARTIN

Corrugated Shipping Cases

Are made from special fibre stock, and are constructed so as to protect the goods from damage or breakage. At the same time saves 75 p.c. of weight of wooden cases.

These boxes comply with the freight classification and are accepted at the same rate as goods packed in wooden boxes. Can be used for shipping by freight or express any goods in reasonable weight package.

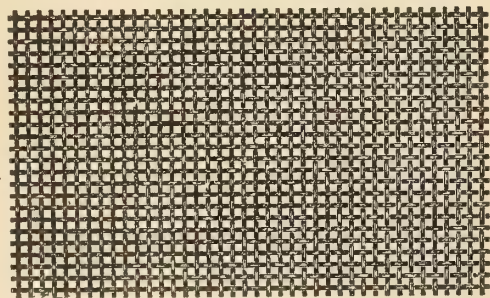
Write for catalogue and sample. Give inside dimensions and weight of contents.

Martin Corrugated Paper & Box Co., Ltd.
Office and Factory 353 Pape Avenue, Toronto

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Wire Cloth

Wire Screening



All grades of Wire Cloth, Double Crimped.

Screening Accuracy Guaranteed.
Made of Steel, Copper or Brass.
Galvanized and Tinned Cloth.

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The Canada Carbide Company is closely allied with The Shawinigan Water & Power Company, which Company supplies them with Electric Power.

From a comparatively small industry and also the oldest, it has grown to be the largest Carbide Company in the British Empire.

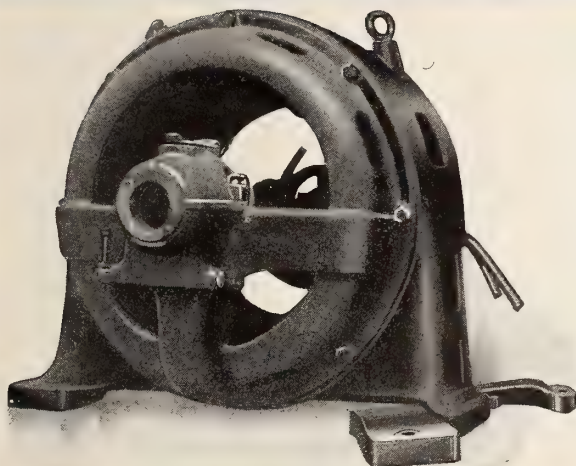
No orders too large for us to fill and no order too small to receive careful and prompt attention.

For sale by agents or direct.

Canada Carbide Company, Limited
MONTREAL - CANADA

Works:
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Shawinigan Falls
Quebec

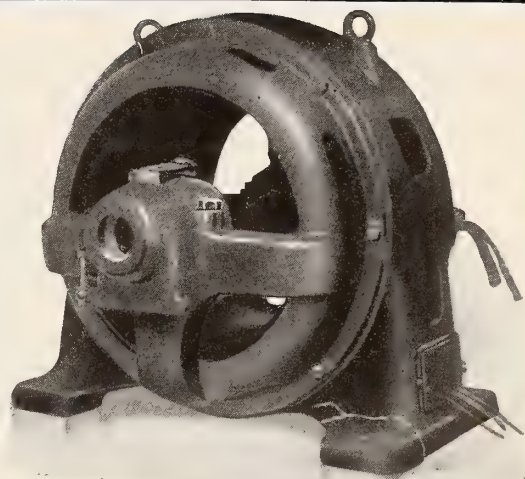
Ask for the GREEN Drum



Broken leg of an electric motor.

WHEN TIME IS WORTH MORE THAN MONEY,

and breakage such as the illustration, etc., occurs, remember that the OXY-ACETYLENE Process can make it as good as new. It took but a couple of hours to put this motor in operation again and the cost of repairs was only a few dollars.



The same, after being welded

Welding saves thousands of machines from the junk pile daily, and you certainly can find valuable applications of the process in your works.

Why Not Investigate Into This Process To-day?

We are the pioneers of the Process, and we only supply apparatus which have withstood the test of years of practice.

Our first desire, is our customers satisfied, profits come after.

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"Every Casting Clean and Uniform"

This is the reason our customers are sending us repeat orders on high-grade

GREY IRON CASTINGS

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**PLATING AND
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We use no scrap when melting our iron, and we are more than commonly careful to see that everything conduces to flawless material and workmanship. A trial order from you will demonstrate the superiority of our service.

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"STELLITE"

***Bigger Cuts
At Higher Speed
Than Any Tool Steel***

Here's a metal for cutting steel and cast iron that is superior to any tool steel made. A tool made of Stellite actually does from 20% to 100% more work in a given time than any steel tool of the same dimensions working under the same conditions.

And it Requires Less Grinding!

For it will cut continuously at a much higher temperature than any tool steel, yet will never burn and its temper is entirely retained.

Every owner of a machine shop owes it to himself to become acquainted with Stellite. It's in a class by itself. There's no steel in its composition and no steel made can give as good results. Write us for particulars and prices.

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Deloro Smelting and Refining Company, Limited
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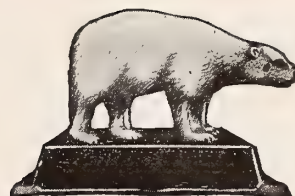
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OUR ENLARGED FACILITIES
ENABLE US TO GIVE YOU
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BRASS, PHOSPHOR BRONZE, COPPER AND ALUMINUM CASTINGS

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HIGH TENSILE STRENGTH



GALT MALLEABLE IRON CO.

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OF ALL KINDS

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Quality is the only thing to look at
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The quality idea pervades each and every casting that we produce, but don't think for a moment that high quality means top-notch price, for users of

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STEEL →

CASTINGS

tell us that our prices are as low and in many cases lower than the regular market.

Joliette Quality, Joliette Price and Joliette Service is a triple combination hard to beat. Write your requirements or send patterns. Knowing means using our product.

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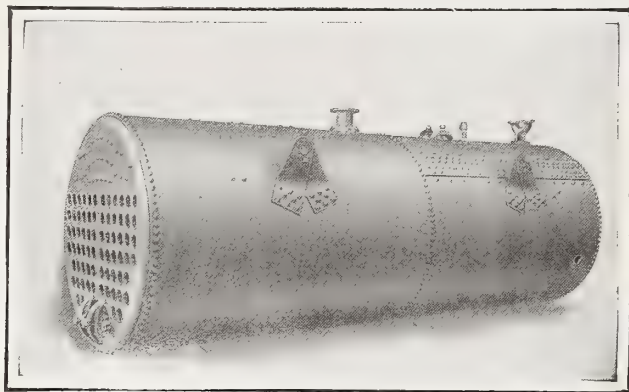
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Write for prices and particulars

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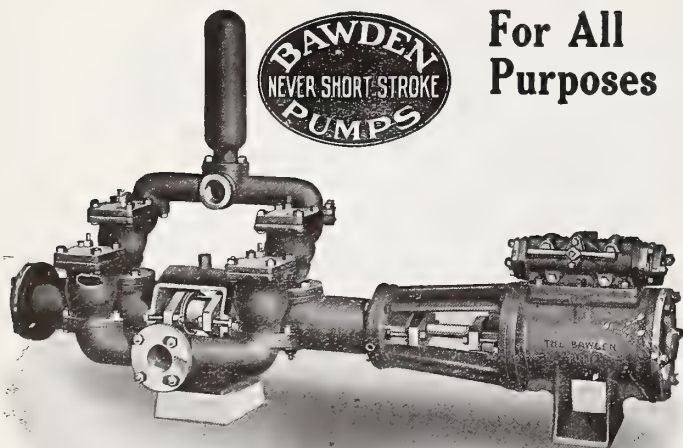
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The pumps backed by a grand reputation
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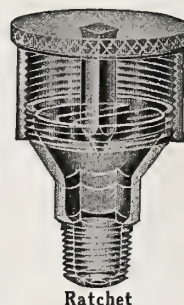
133 Sterling Road, Toronto, Canada

PRESSED STEEL AND BRASS GREASE CUPS OIL HOLE COVERS, OIL CUPS

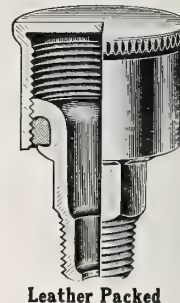
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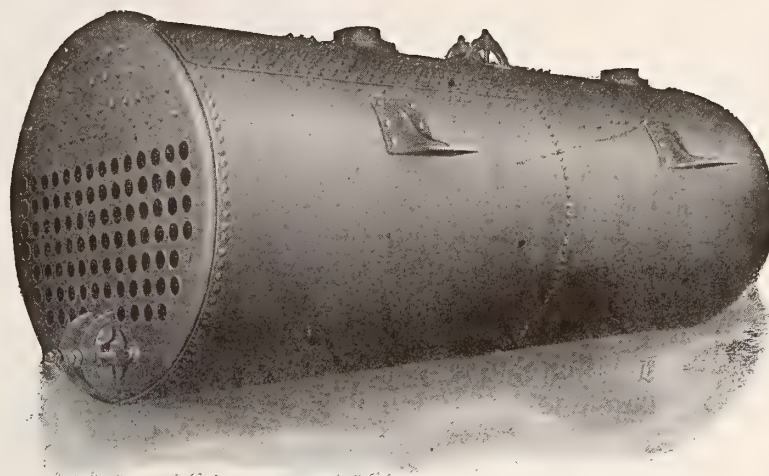
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STANDARD RETURN TUBULAR BOILER

We make boilers of all kinds for any service.

We are also sole Canadian makers of Erie City Water Tube Boilers, Vertical and Horizontal.

The large number of pleased and satisfied owners of "INGLIS" Boilers is our best advertisement.

For (52) fifty-two years our boilers have been the standard. We have installations of our different types of boilers, which our representatives will be pleased to show to prospective purchasers. Write us for prices, etc.

INGLIS' PRODUCTS ARE "MADE-IN-CANADA"

The John Inglis Company, Limited

ENGINEERS AND BOILERMAKERS

14 Strachan Avenue

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Ottawa Representative: J. W. ANDERSON, 7 Bank Street Chambers

YOU CAN INCREASE YOUR POWER WITHOUT INCREASING THE SIZE OF YOUR POWER PLANT

Your present line shafting is consuming from 15% to 60% of your power.

The Chapman Double Ball Bearing will save this waste and turn it into productive energy.

They will also reduce your oiling and attention to a minimum.

They fit any adjustable hanger and the change can be made with but little delay to you.

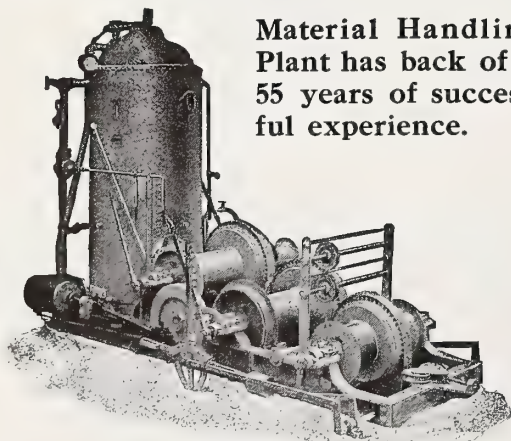


In use in over 2,000 Canadian Factories

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Material Handling Plant has back of it 55 years of successful experience.

HOISTING ENGINES
STEEL DERRICKS
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Horizontal and Water Tube Type Stacks, Tanks, Water Flumes.

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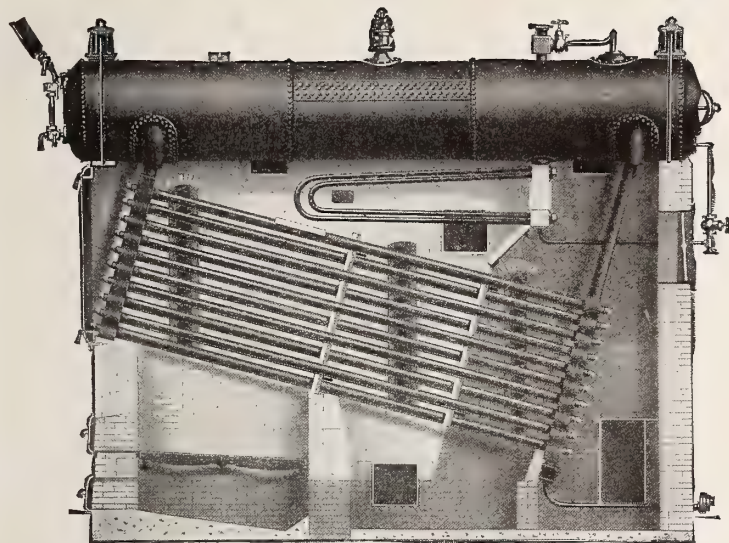
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Given prompt attention.

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Make Your Plant Independent by Producing Your Own Power



Showing a Sectional View of the G. & McC.
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It is the only way to be absolutely sure of an uninterrupted power service at all times. When you depend upon others, you never know when a "break in the line" is going to occur and your whole machine equipment may be suddenly stalled in the very midst of the most important and urgent operations, by the failure of something over which you have no control whatever. Far better to produce power of your own—and usually cheaper, too!

"G. & McC. Co." Boilers and Engines

will solve your power problem satisfactorily and will provide you with that continuous and economical motive power that your industry depends upon for dividends.

You will find G. & McC. Co. Boilers and Engines perfect in design and construction and from our line you can select the *exact* type and capacity for your own particular needs.

NOTE THIS

All those parts of G. & McC. Co. Sectional Water Tube Boilers that are subjected to steam pressure are made of

FORGED STEEL

G. & McC. Co. products, whose fame is nationwide, include:—

Goldie, Corliss, Wheelock, Ideal and Vertical High-Speed Steam Engines, Steam Turbines, Return Tubular and Water Tube Boilers, Heaters, Tanks, Pumps and Condensers, Transmission Machinery, Safes and Vault Doors.

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ESTABLISHED 1875

The Boiler Inspection and Insurance Co. of Canada

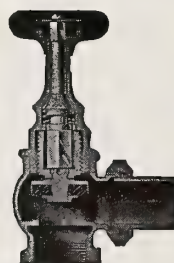
Continental Life Building, Toronto

Issues Policies of Insurance after
A CAREFUL INSPECTION OF
THE BOILERS Covering LOSS
OR DAMAGE TO PROPERTY
and LOSS RESULTING FROM
LOSS OF LIFE AND PERSONAL
INJURIES. :: :: :: ::

Policies Guaranteed by THE
HARTFORD STEAM BOILER
INSPECTION AND INSURANCE
COMPANY. :: :: ::

Assets for Security of Policy-
holders, \$4,552,020.43. :: ::

JOHN L. BLAIKIE	- - -	President
H. N. ROBERTS	-	Vice-President and Sec'y
GEO. C. ROBB	- - -	Chief Engineer
A. E. EDKINS	- -	Ass't Chief Engineer



Patented 1909



WHY be continually troubled with
leaking packing boxes on your
Radiator Valves, spoiling floors, ceil-
ings and carpets, when by installing

KERR PACKLESS RADIATOR VALVES

this can all be avoided.

Specify these valves for your office,
house or factory heating, and you will
not regret it.

THE KERR ENGINE CO., Limited
Valve Manufacturers WALKERVILLE, ONT



Penman's



Underwear, Hosiery and Sweaters
Laundry, Pulp and Papermakers' Felts, Blankets
Lumbermen's Socks, etc.

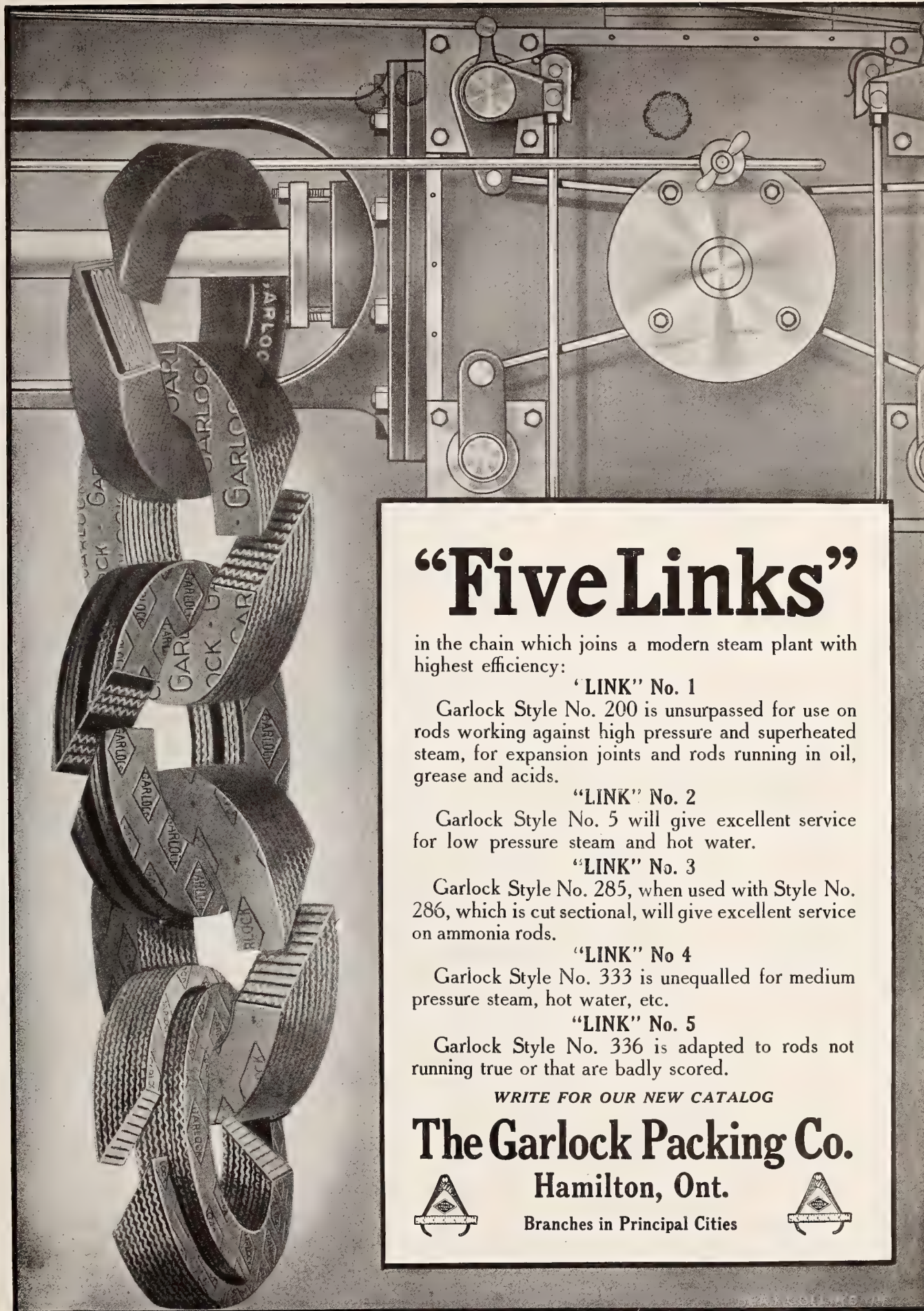
Factories at

PARIS, THOROLD, PORT DOVER, ALMONTE AND BRANTFORD, ONTARIO
ST. HYACINTHE AND COATICOOK, QUEBEC

Penman's

LIMITED

PARIS : : : CANADA



“Five Links”

in the chain which joins a modern steam plant with highest efficiency:

“LINK” No. 1

Garlock Style No. 200 is unsurpassed for use on rods working against high pressure and superheated steam, for expansion joints and rods running in oil, grease and acids.

“LINK” No. 2

Garlock Style No. 5 will give excellent service for low pressure steam and hot water.

“LINK” No. 3

Garlock Style No. 285, when used with Style No. 286, which is cut sectional, will give excellent service on ammonia rods.

“LINK” No 4

Garlock Style No. 333 is unequalled for medium pressure steam, hot water, etc.

“LINK” No. 5

Garlock Style No. 336 is adapted to rods not running true or that are badly scored.

WRITE FOR OUR NEW CATALOG

The Garlock Packing Co.

Hamilton, Ont.

Branches in Principal Cities



Show This Advertisement to Your Power Man—

A SUPERINTENDENT WRITES :

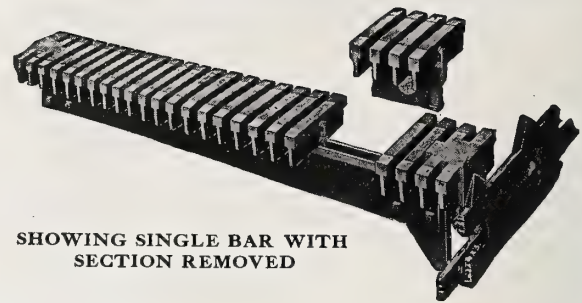
Oshawa, Ont., March 30th, 1916.

Galt Foundry Co.,
Galt, Ont.
Gentlemen :—

Some months ago we ordered one set of McNaughton Rocking Grates for our No. 1 Boiler. We have been using this continually ever since, and they gave us such good satisfaction, that we followed up the order with two more sets for our No. 2 and No. 3 boilers. We may also add that these are giving entire satisfaction and showing a clean fire at all times.

Yours truly,
(Signature).....

Name of above company on request.



SHOWING SINGLE BAR WITH
SECTION REMOVED

A GRATE BAR

that gives universal satisfaction. It is in use in more than one hundred of the biggest plants in Canada.

The McNaughton Rocking Sectional Grate Bar

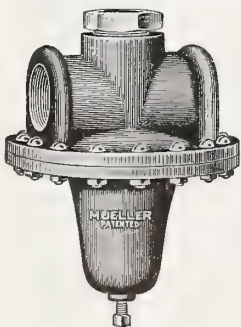
has high efficiency, long life and low repair costs.

Write for Descriptive Leaflet

GALT FOUNDRY CO. - - Galt, Ontario

Mueller Valves Never Disappoint You

They can be absolutely relied upon
to do their work to perfection.



The fact that Mueller Reducing and Regulating Valves are so universally used speaks conclusively as to their efficiency and economy.

13160

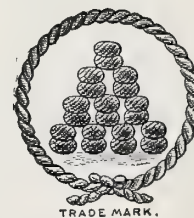
is the number of the valve illustrated, and it is easily the greatest all-around valve on the market.

Catalog No. 5

should be on your desk for emergency ordering. Drop us a line requesting it and we'll send you a copy by return mail.

H. Mueller Mfg. Co.
Limited
SARNIA, ONT.

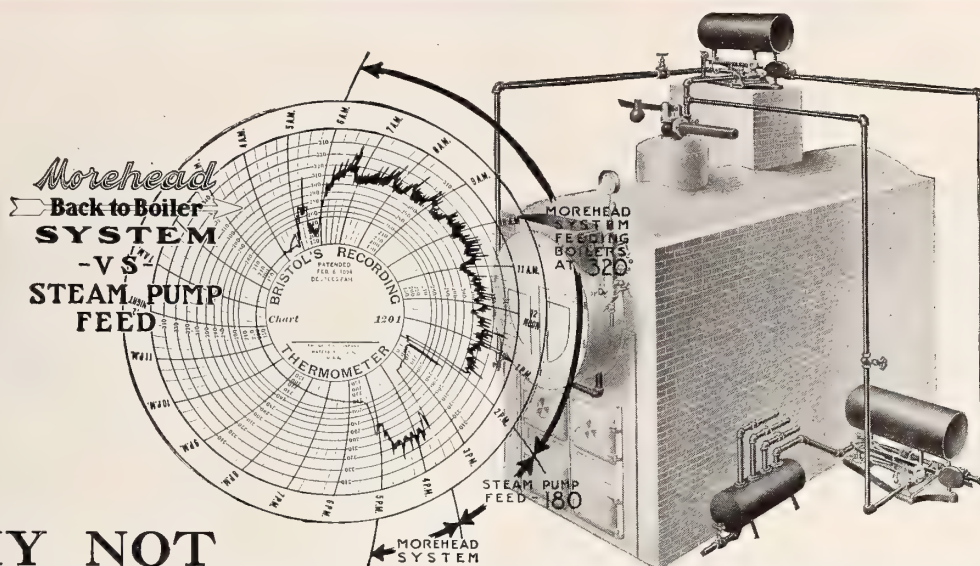
Shurly & Derrett, Limited TORONTO



Manufacturers of

**TWINES
COTTON AND
JUTE ROPE**

**MILL & SPINDLE
BANDING, etc., etc.**



WHY NOT A THIRD METHOD OF BOILER FEEDING?

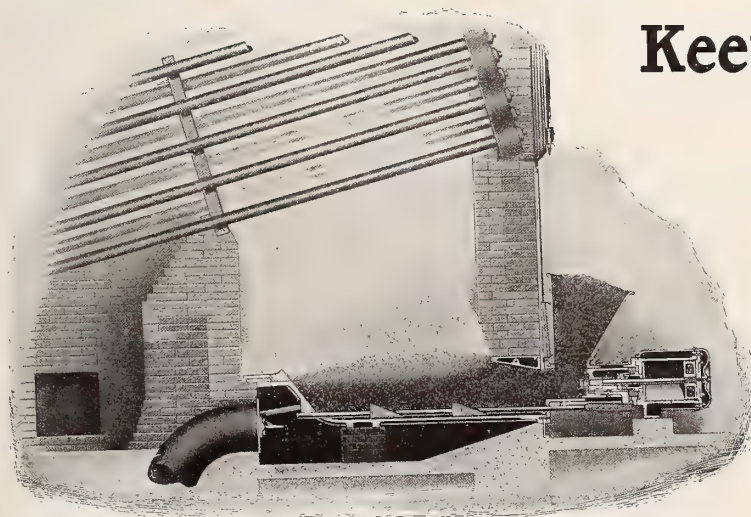
Keep your Injector and Steam Pump as Auxiliaries, but for economy in every sense of the term drain your steam lines—whether heating, drying or cooking—and feed your boilers, simultaneously with the

MOREHEAD BACK-TO-BOILER SYSTEM

Condensation is instantly removed from the heating surfaces and returned direct to the boiler while HOT—automatically—wastelessly—90% cheaper and 100 degrees to 150 degrees hotter than a pump can do it. Write for complete facts and economy figures—no obligations. Address

Canadian Morehead Mfg. Company, "Dept. K," Woodstock, Ontario

352



Keeps right on saving your money

That's what the Jones Underfeed Stoker does—from the very start. There isn't a coal-fed steam boiler anywhere in the country but that would give better results and be more economical in fuel consumption by the attachment of this time-tried feeding system.

THE JONES UNDERFEED STOKER

Made in Canada

GET THE FULL FACTS

If you are responsible for a steam boiler's ability to help pay dividends, you will be wise to write us to-day for a booklet describing fully the Jones Underfeed Stoker.

No business man can afford to neglect fuel-savings, for it's often in the savings that profits are made. Shovelling on coal in the old way was all very well in its day—but its day is done, for the Jones Stoker system has **proved** itself superior in every respect, the actual fuel-savings running from 15 to 25 per cent.

Jones Underfeed Stoker Company, Limited
NATIONAL TRUST BUILDING, TORONTO

INDUSTRIAL LOCOMOTIVES



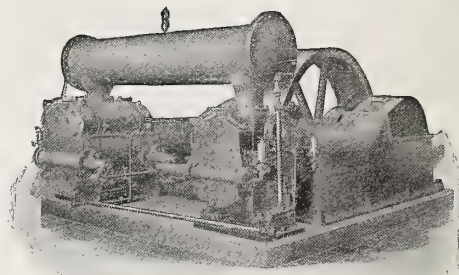
Locomotives on trunk line railroads have the advantage of the best facilities for inspection and repairs.

Industrial locomotives face different conditions. They must work day after day in the hardest service, and often in localities where repairs cannot be made without great inconvenience. That is why we build our industrial locomotives from interchangeable stock parts. With this system every part must fit every other locomotive of the same size and design, and long delays waiting for duplicate parts is avoided. Interchangeable parts kept on hand at our Works for prompt shipment.

MONTREAL LOCOMOTIVE WORKS, LTD.

DOMINION EXPRESS BUILDING, MONTREAL, CAN.

Air Compressors



DB2 AIR COMPRESSOR

EFFICIENT, RUGGED

Moderate in cost. Built to successfully stand severe and continuous service. Full range of sizes and types.

Write for Bulletin

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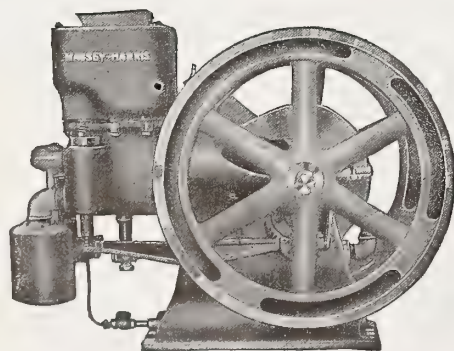


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GASOLINE ENGINES MASSEY-HARRIS PUMP OUTFITS

THESE Engines represent the very best type of Gasoline Engine construction. They have been developed to their high state of efficiency by those whose lifework has been the designing and building of Gasoline Engines.

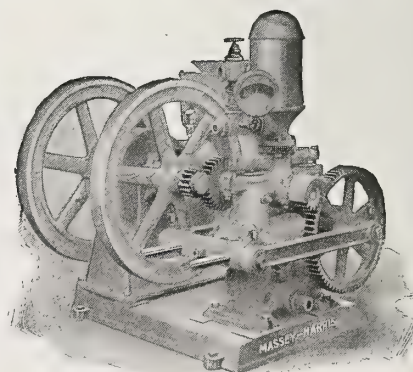
Their high efficiency, coupled with their economy of operation and durability, combine to make Massey-Harris Engines, without exception, the most reliable and satisfactory on the market to-day.



Stationary or Portable
1½ to 20 Horse Power.
Maximum Power with
Minimum Consumption
of Gasoline.

FOR THE CONTRACTOR

Engines, Pumps, Hoists,
Dump Wagons, Dump
Carts, Dump Boxes,
Teaming Gears, Lorries,
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ETC.



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Branches at: Montreal, Moncton, Winnipeg, Regina, Saskatoon
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AGENCIES EVERYWHERE

Cylinder Pumps and
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Stationary or Mounted
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and Efficient.

BUTTERFIELD'S

For Accuracy **TAPS** and Speed

For work on hard steel you'll find perfect satisfaction comes from the use of Butterfield Taps.

Their superb quality is especially appreciated in shops handling shell contracts.

During the many years they have been on the market, purchasing agents, foremen and machinists have all alike recognized their supreme efficiency and economy.

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They'll confirm the wisdom of your judgment.

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We have experimented on the
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and have produced a
HACK SAW BLADE
that will give unequalled
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HIGH-SPEED MACHINES

Possibly we could help you.

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Canadian-Made"*

VICTOR SAW WORKS, LTD.
HAMILTON, ONT.



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WROUGHT PIPE BLACK AND GALVANIZED
1/8 TO 4 INCH

Thoroughly inspected and tested
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Ask Your Jobber for



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Also BOLTS, NUTS, RIVETS—All Kinds

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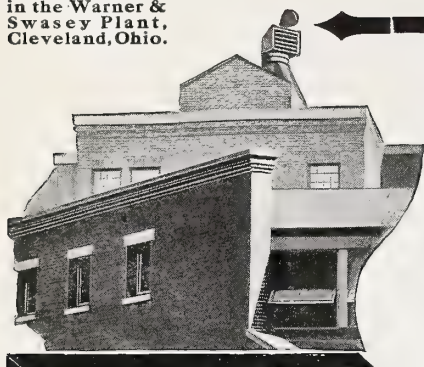
Canadian Rolling Mills Co., Limited
BAR IRON AND STEEL

Colonial Wire Mfg. Co., Limited
WIRES, WIRE NAILS, WOOD SCREWS, ETC.

WORKS: LACHINE CANAL

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Showing 48-inch Ormsby-Swartwout Ventilator, ventilating 6, stories of factory toilets (58 units) in the Warner & Swasey Plant, Cleveland, Ohio.



Ormsby-Swartwout Rotary Ball-Bearing VENTILATORS

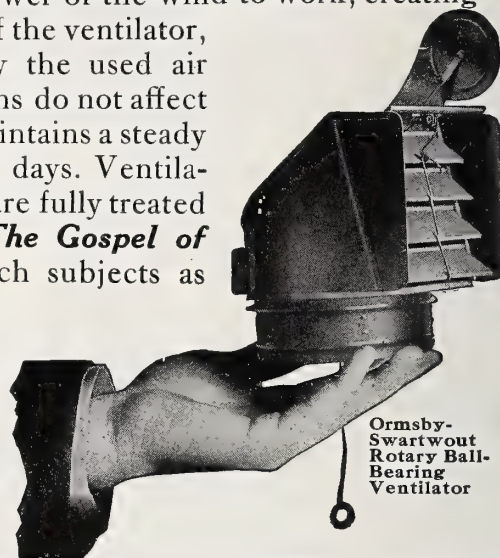
fresh air and labor output, ventilation and workers' errors, the semi-mechanical principle, exact specifications, list of users, etc. It's free to you on request. Give name of company and writer.

A. B. ORMSBY CO., Limited
TORONTO

Associated with the Metal Shingle & Siding Co., Ltd., Preston, Montreal, Winnipeg

SIX years ago a single Ormsby-Swartwout Ventilator was installed on this plant. Since then they have installed twenty more ventilators as a result of the "pulling power" of their first Ormsby-Swartwout.

In the Ormsby-Swartwout Ventilator, "pulling power" is an actual fact. It puts the free power of the wind to work, creating a vacuum before the mouth of the ventilator, which is continually filled by the used air below. Temperature conditions do not affect it—the Ormsby-Swartwout maintains a steady flow of air even on the hottest days. Ventilation and ventilation problems are fully treated in our 24-page handbook "*The Gospel of Fresh Air.*" It takes up such subjects as



Ormsby-Swartwout Rotary Ball-Bearing Ventilator



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Canadian Hart Wheels

CUT FASTER LAST LONGER
Than any other wheels on the market

Tell us the service you want performed and we will supply you with an abraser that will save you time, money and worry.

Send for one of our catalogues and tell us your troubles. We do the rest. :: :: :: ::

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The Canada Metal Co., Limited

Manufacture in Canada

Our
Babbitt
Metals
Give
Excel-
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Service



We
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We
Manu-
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FOR GENERAL MACHINERY BEARINGS
TRY

Harris Heavy Pressure

THE BABBITT METAL WITHOUT A FAULT

WE HAVE EVERYTHING IN METALS

Ask for Our New Catalogue. Mailed FREE on Request

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MADE IN



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Brass, Bronze Gilding Metal

In Sheets, Rolls
Plates and Rods



For shaftings and bearings use
Brown's Special Marine Bronze Rod.
It has the inherent quality that is
essential in metal for such purposes.
And for drilling and free turning
you will find few others equal to

Beaver Brass Rod
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*Your inquiry for quotations on these metals
will receive prompt and careful attention*

BROWN'S COPPER & BRASS LIMITED
ROLLING MILLS

General Offices and Mills

New Toronto, Canada

THE CANADIAN BRIDGE CO., Limited

WALKERVILLE, ONTARIO

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RAILWAY AND HIGHWAY BRIDGES

Locomotive Turn Tables. Roofs, Steel Buildings and Structural Iron
Work of all Descriptions

DOMINION BRIDGE COMPANY, Limited

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CAPACITY 135,000 TONS

Railway and Highway Bridges, Swing and Bascule Spans, Buildings of all Kinds, Hemispherical Bottom and other Tanks, Transmission Poles and Towers, Riveted Pipe, Caissons, Barges, Turntables, Electric and Hand Power Cranes, Hoisting Appliances, Lift Locks, Hydraulic Regulating Gates, etc. Gear Cutting and General Machine Work.

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STRUCTURAL STEEL For Every Purpose

Estimates Furnished Promptly for all Classes
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5,000 Tons Standard Structural Shapes Carried in Stock
for Quick Delivery.

STRUCTURAL STEEL COMPANY, LIMITED

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25 Spans, Weight 2,500,000 Lbs.

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ENGINEERS, MANUFACTURERS, CONTRACTORS

For Steam Railways, Electric Railways, Highways, Etc. For Factories, Offices, Warehouses, Power Stations, Mill Buildings, or any other purposes

STEEL Bridges Buildings



Quality

Service

Courtesy in Business

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Fittingly framed and hanging in the Offices of one of the most important Public Service Corporations on this North American Continent is the following

'Did you say Please and Thank you?'

Broad-minded men direct the destiny of that Corporation, men who know that public or private enterprises to be lastingly successful must operate for the public good.

Quality and Service are two important factors in our business life to-day, but Courtesy is the door through which they must enter.

We are large producers of Hamilton Pig Iron and our output of Open Hearth Steel Blooms and Billets, Iron and Steel Bars of all shapes and size runs into enormous tonnage.

The products of our mills include practically everything that can be manufactured from Iron and Steel and these we distribute to thousands of satisfied customers.

Our business is an extensive one and a successful one. The world is our market, but our prosperity and success in the future, as in the past, depend upon the continued confidence, co-operation and good will of the people we serve.

The Steel Company of Canada, Limited

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Nova Scotia Steel & Coal Co.

LIMITED

Head Office: New Glasgow, Nova Scotia

Steel Works - - - - TRENTON, N.S.

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"OLD SYDNEY COAL"

Shipping Port, North Sydney

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THE CONSOLIDATED MINING AND SMELTING CO. OF CANADA, LIMITED

BUSINESS OFFICE AND WORKS: TRAIL, BRITISH COLUMBIA

SMELTERS AND REFINERS
Purchasers of all Classes of Ores

Producers of
TRAIL BRAND PIG LEAD

Eastern Agents: Thomas Robertson & Co., Limited, Montreal

Link-Belt Silent Chain

The Master Transmission for Power



Look for the Name on the Washers

Look for the Liners in the Joints

An essential factor in every plant where efficient and reliable operation are required.

Transmits power at an efficiency of 98.2%, on short or long centres, in hot, cold, damp or oily places.

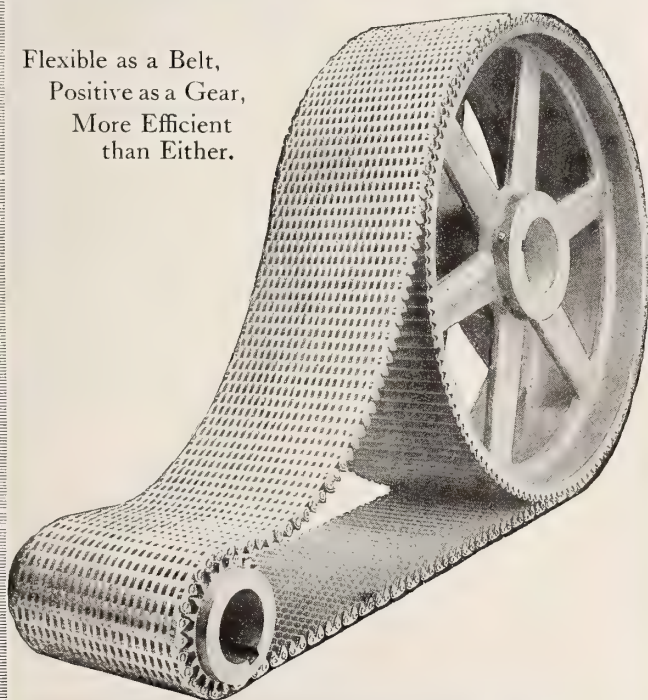
The success of Link-Belt Silent Chain is due to its patented Pin-Bushed-Joint construction—a round pin and two case-hardened semi-circular bushings—found in no other chain.

Write for Data Book No. 125, our 112-page price list and handbook. It tells how to figure drives, and to determine prices.

CANADIAN LINK-BELT CO., LTD.

265 Wellington St. West, TORONTO

Flexible as a Belt,
Positive as a Gear,
More Efficient
than Either.



Every Foundry Needs

in its cupola mixture a strong, pure iron that is capable of completely nullifying the various impurities that are always present in ordinary pig iron and scrap.

And you will find just the strong, pure iron you need in

DESERONTO Charcoal Pig Iron

Its use results *always* in a stronger, closer grained and more easily machined casting. It saves many a valuable casting from the scrap heap, too.

Look into it. One trial will convince you that it's the truest foundry economy to introduce *Deseronto Charcoal Pig Iron* into your cupola mixture.

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Iron Company
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General Sales Agents

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Rapid production is dependent on the use of ECONOMICAL TOOLS AND STEEL. It is safer *not* to specify High Speed Steel, but

Demand "Tyr," the Economy Steel

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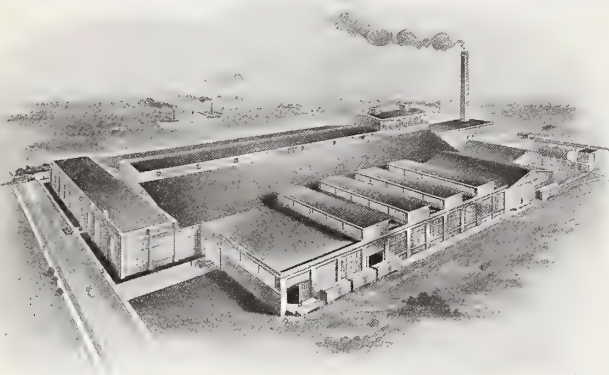
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LIMITED

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Dominion Bank Building, Toronto

WORKS, LONGUEUIL, P.Q.



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Cold Drawn, Cold Rolled
Turned and Polished Steel

FINISHED KEYS

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"CRANES MADE IN CANADA"



ELECTRIC TRAVELING CRANES

HAND POWER TRAVELING CRANES

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AIR HOISTS

FOUNDRY EQUIPMENT

NORTHERN CRANE WORKS, LIMITED

WALKERVILLE, ONTARIO

UNION DRAWN STEEL CO., Limited

HAMILTON, ONTARIO

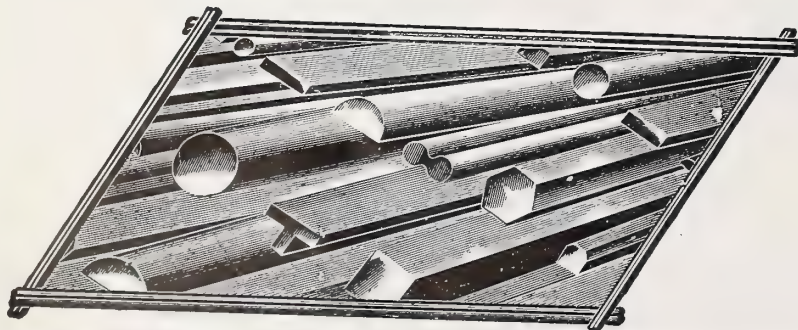
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LARGEST STOCK IN CANADA

Get prices before ordering elsewhere.



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NORTHERN ELECTRIC paper insulated, lead covered Power Cables are designed, manufactured and tested to maintain the highest possible factor of safety.

In every phase of their production, engineering skill of the highest order directs their manufacture.

To those interested we will be glad to send a list of the larger

users of this class of cable, who will verify our claims for Northern Electric Power Cables.

Among all rubber covered wire, "Adanac" enjoys the largest sale in Canada. The carefulness and skill with which this wire is insulated secures a degree of safety in excess of underwriters' requirements.

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Armoured Cables
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Elevator Cable
Fixture Wire
Flameproof Wire and Cable
Lamp Cord
Lead Covered Cables
Magnet Wire
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Motor Boat Wire
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Packinghouse Cord
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Paper Insulated Telephone Cable
Portable Lamp Cord
Rubber Covered Wire
Rubber Covered Cable
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Signal Wire
Slow Burning Wire
Slow Burning Weatherproof Wire
Switchboard Cable
Switchboard Cords
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Etc., Etc.

CABLE SYSTEMS INSTALLED

Inquiries as to specifications and prices are welcomed at any of our branch houses.

Northern Electric Company

LIMITED

Montreal
Halifax

Ottawa
Toronto

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Calgary
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"JUST as I told you—the right cement floor finisher would make our concrete floors wearproof, waterproof and oilproof. Now you see why I specified

R.I.W. CEMENT FILLER & CEMENT FLOOR PAINT
REMEMBER ITS WATERPROOF
REG. U.S. PAT. OFF. PATENTED AS TO PORTLAND CEMENT FEB 27, 1906

R. I. W. Cement Filler and Cement Floor Paint seal the sandy, porous surface of concrete and cement floors and in this way stop the constant sanding, water infiltration and the soaking up of oil. And it is so easy to apply—anybody can do it perfectly. Twelve standard decorative colors. A two-coat proposition that resists wear longer than anything else we have ever seen. Don't let "cement dust" fly as the floor scuffs off or sands. Stop it immediately with an application of these wonderful preservatives, and save your machinery and stock. Write for illustrated Booklet from Dept. 55.

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TOCH BROTHERS
Gerrard St. and Carlaw Ave.
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Are You Sure Your Electrical Wiring is Safe?

There is but one absolutely safe method of wiring. Instal a **CONDUIT SYSTEM**, it will eliminate all risk of Fire.

"Galvaduct" & "Loricated"
"Conduits"
HAVE NO EQUALS

Conduits Company Limited
TORONTO MONTREAL

HERE'S THE FUSE IT PAYS TO USE



There's reason as well as rhyme in this assertion. Because Economy Renewable Cartridge Fuses will save you easily 80% of your fuse costs. Some saving, isn't it?—and well worth while for any concern.

ECONOMY renewable cartridge FUSES

embody the principle of discarding the blown-out cartridge and retaining the shell indefinitely. When a blow-out occurs where the Economy is in use, instead of throwing away the whole fuse, as is the case with non-renewable types, you simply renew the cartridge. Here's a direct saving, that will appeal to any man of business. And economy fuses have the full approval of the Canadian Board of Fire Underwriters.

WRITE

for Catalog 40—State capacity and voltage needed and we will also send you FREE samples.

Made in Canada by

Economy Fuse & Mfg. Co. of Canada, Limited
UNITY BUILDING, MONTREAL

Manufacturers in Canada of "S & C" High Potential Fuses—to 150,000 Volts

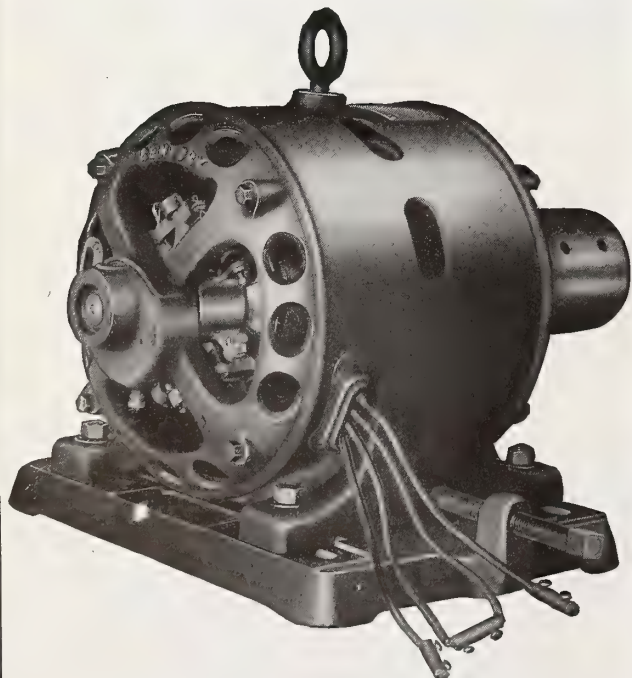
"Look for the Gray Shell"

Jones & Moore Electric Co.

LIMITED

294-300 Adelaide St. W.

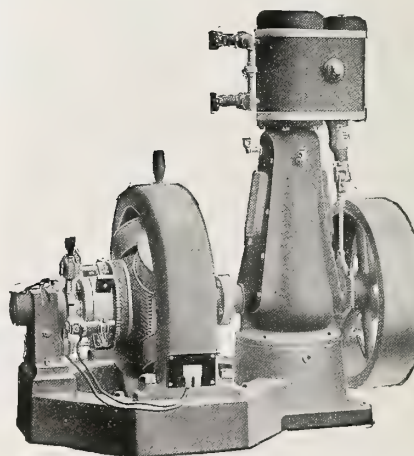
Toronto



MANUFACTURERS OF DYNAMOS AND MOTORS
REPAIRS PROMPTLY PERFORMED

Toronto & Hamilton Electric Co., Ltd.

HAMILTON



**MAKE
INDUCTION
MOTORS**

*up to
35 Horse
Power*

**GENERATORS FOR DIRECT CURRENT
BELTED AND DIRECT DRIVEN**

Write for Prices

Toronto & Hamilton Electric Co., Ltd.

99-103 McNab St. North, HAMILTON

Money Wasted on Samples

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OU need not waste hundreds and thousands of dollars annually on Samples for your Salesmen, the middleman and the general public.

If it has been the habit---and you can call it nothing else---to send real Samples to your salesmen and general purchasers, it means a lot of money spent each year on samples. You can eliminate this costly habit by illustrating your products in their natural colors. Anything such as Fancy Biscuits, Ladies' Wear, Jewellery, Silks and so on, can be produced in their natural colors and shown on paper by

SOUTHAM PRESS LIMITED

TORONTO and MONTREAL



Southam Building, Toronto

*Canada's Leading
Printers*

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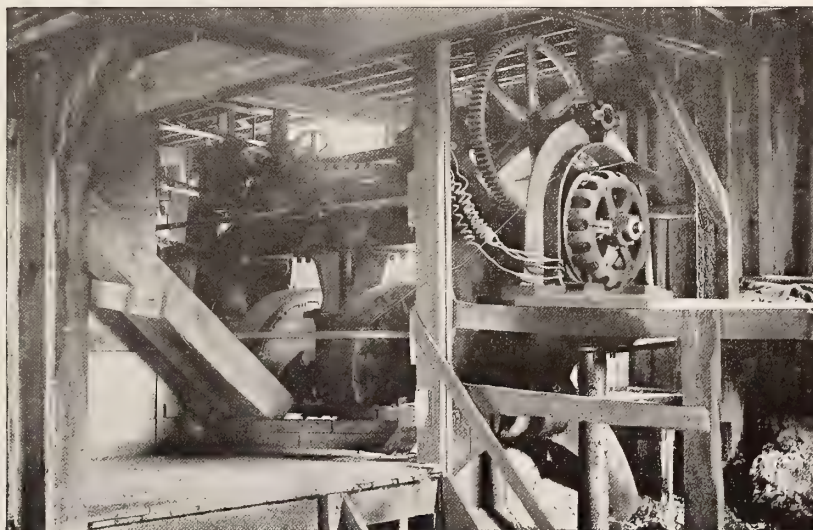


Southam Building, Montreal



Westinghouse

Type CCL Induction Motors

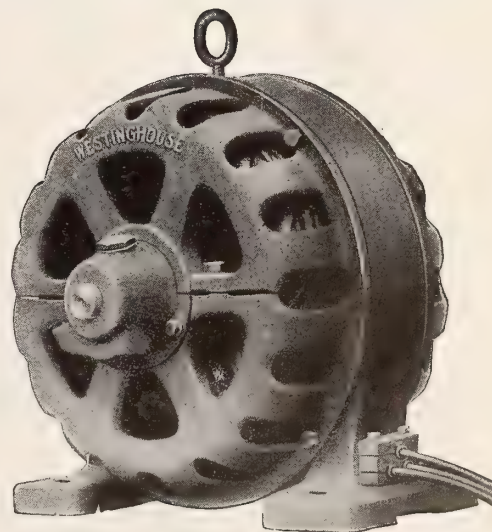


Type CCL Motor Driving Dry Pan in a Brick Yard

Are You Paying Something for Nothing?

Do you drive a long line shaft to operate a single machine? If so, you are paying power bills for wasted energy.

Individual drive with Westinghouse Type CCL Induction Motors will enable you to increase your output — save transmission losses and prevent tie-ups from line-shaft bearing troubles.



Canadian Westinghouse Co., Limited, Hamilton, Ont.

TORONTO
Traders Bank Bldg.

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52 Victoria Square

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HALIFAX
105 Hollis St.

FORT WILLIAM
Telfer Bldg.

WINNIPEG
158 Portage Ave. E.

CALGARY
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EDMONTON
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Barrett Specification Roofs

Guaranteed
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Years

Made in Canada

OUR new plan to guarantee Barrett Specification Roofs for 20 years seems to have met with instant welcome from architects, owners and roofing contractors. During the first few weeks the plan was in operation *several million feet* of Barrett Specification Guaranteed Roofs were specified.

This means that the owners of these roofs are guaranteed against all roof repair and upkeep expense until 1936.

This new Guaranty Bond is issued on all Barrett Specification Roofs of 50 squares or more in all towns in Canada and in the United States of 25,000 population and over—and in smaller centers where our Inspection Service is available.

Our only requirements are that the roofing contractors be approved by us and that The Barrett Specification dated May 1, 1916, shall be strictly followed.

The Guaranty is arranged for as follows:

The owner or his architect orders the roof-

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MONTREAL TORONTO WINNIPEG VANCOUVER

THE CARRITTE-PATERSON MANUFACTURING CO., LIMITED
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ing contractor to "construct a Barrett Specification Roof and get for him a 10 Year Guaranty Bond for the work."

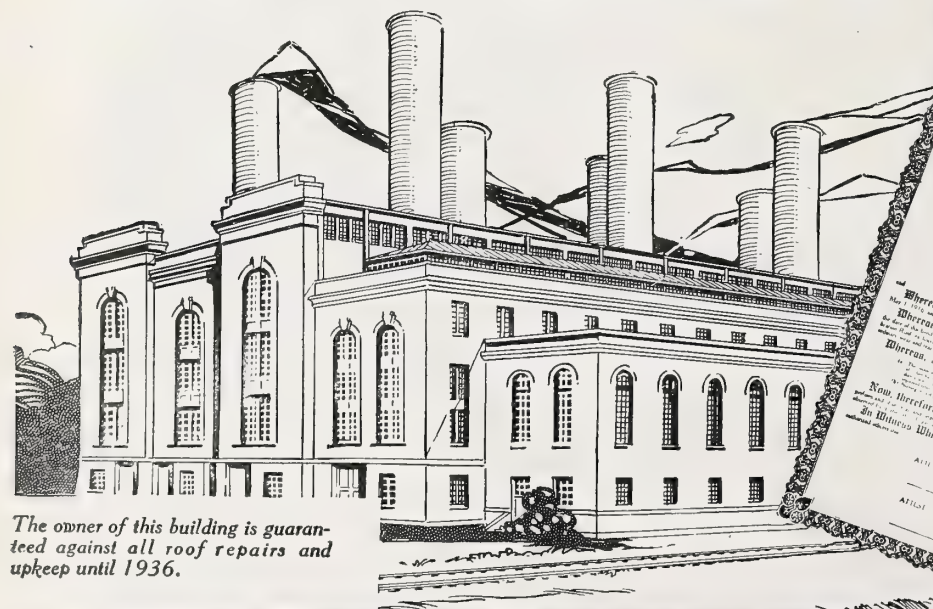
The contractor notifies us that he wishes the 20 Year Bond and will construct the roof under the supervision of our Inspector.

Our Inspector on completion of the job certifies that the proper quantity of Specification Pitch and Felt has been used and that The Barrett Specification of May 1, 1916, has been strictly followed.

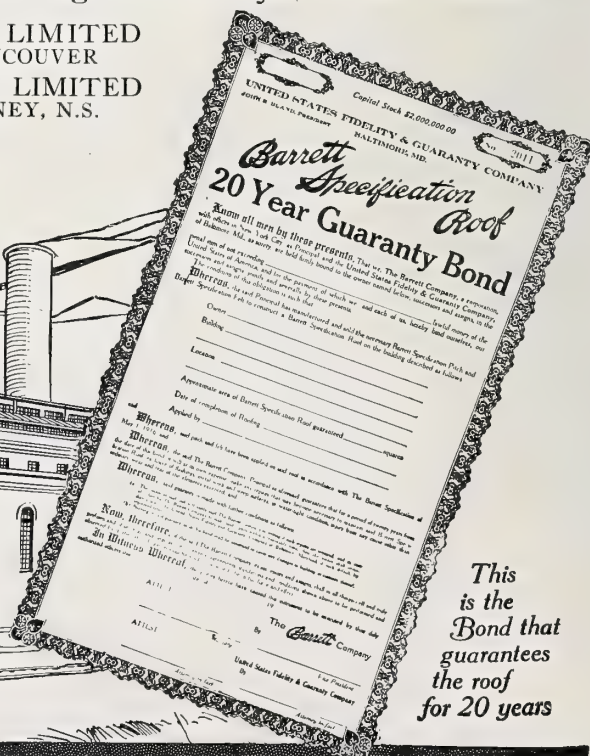
On our O. K. of the job, the U. S. Fidelity & Guaranty Company issues a regular 20 Year Guaranty Bond, by which the owner is relieved of all costs for repairs or maintenance to the roof during the next 20 years.

The Guaranty Bond costs the owner and roofing contractor nothing. The service is free in the interest of good workmanship and the good repute of our materials.

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The owner of this building is guaranteed against all roof repairs and upkeep until 1936.



This
is the
Bond that
guarantees
the roof
for 20 years

INDUSTRIAL CANADA

ISSUED BY
The CANADIAN MANUFACTURERS ASSOCIATION.
INCORPORATED.

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A Plea for United Action.

THE resignation of Sir Thomas Tait as Director-General of National Service, regrettable as it was in many respects, will not have been in vain if it effectually frees the great work he so quickly laid down from any possibility of political interference, and if it unites both political parties in a firm resolve that henceforth Canada will discharge to the full the duty she owes to herself and to her Allies.

Neither Conservatives nor Liberals can be entirely absolved from responsibility for the deplorable fact that after twenty-six months of participation in the war, Canada is still far from properly organized for war. It is true that the initiative rested with the Government, and it must be set down to their credit that they took the initiative and pursued it for a time with vigor. But as they encountered political obstacles they began to balk. Like the horse in the steeplechase they refused to take the "jumps," for the reason that on the other side of those jumps they thought they saw trouble.

Where the Government were to blame was in not taking the jumps as they came to them. Regardless of the appearance of danger they should have kept their courage

up and run the race through. Where the Opposition were to blame was in crowding in on the course and making a hostile demonstration instead of leaving the Government a free field.

Possibly Canada made a mistake in the early stages of the war in not forming a coalition government. Had she been as close to the scene of the conflagration as England was, she might have felt impelled to do so. Remembering the Irish situation and the political animosities arising therefrom that had to be swallowed before coalition was possible in England, it seems clear beyond question that there were no insuperable obstacles to coalition in Canada had its advantages in relation to the prosecution of the war been properly appreciated. Even yet it should not be too late to correct a mistake, if a mistake has been made.

But whether coalition in name is brought about or not, coalition in spirit must be effected if Canada is to acquit herself with credit. The reputation at stake is not the reputation of the Conservative Government, nor of the Liberal Opposition, but the reputation of Canada as a nation. Her place in history will be judged by other peoples, not by herself. But for the gallantry of those of her sons who have offered themselves for the supreme sacrifice, that reputation would even now be under shadow. The light of her soldiers' deeds will live forever, but its brilliance is being beclouded by the smoke from smouldering fires of patriotism that fail to burst out into clear flame.

To redeem this situation, Canada must be prepared to act, and to act as a unit. The one fatal thing for her at this stage is not to act, or to further delay action. We may all have our opinions as to how she should act, and among those opinions there may be honest differences, but however forcefully we express ourselves, we should refrain from creating the impression that our co-operation will be given to the Government only providing they act in accordance with our views. On the contrary we ought all to be prepared to give a fair trial to any policy which those in authority may announce.

The means chosen by the Government some weeks ago for bringing Canada properly into action was National Service. The effectiveness of National Service as a means to the end sought depended first upon whether the Government were really sincere in their desire to have it succeed, and were prepared to give the Director-General a free hand in working out his plans. Next it depended upon whether

the Opposition were willing, not simply to refrain from raising objections, but actually to turn in and help.

It may or may not be fair to assume from Sir Thomas Tait's resignation that National Service, as first planned by the Government, was to be little more than a political football. The main thing for us to realize now is that his action has challenged public attention in a manner that leaves the Government no alternative but to make National Service a success, be the political consequences what they may.

In Mr. R. B. Bennett, M.P., the new Director-General, National Service has a man of large capabilities, of unlimited energy, and of that kind of independence and determination that will brook no interference. Under his direction we are justified in looking for quick and effective results. For his own sake, for the Government's sake, for Canada's sake, we hope he gets them, and we will count no task too hard, no sacrifice too great, in assisting to that end.

Our Declaration of Independence.

JUST because INDUSTRIAL CANADA has sometimes been frank enough to tell the Government in plain language where it thought they were wrong, a few of the Liberal papers have chortled with glee, believing to see in our attitude an indication that the Canadian Manufacturers Association was taking sides with the Opposition.

We would like it to be clearly understood, once and for all, that the Canadian Manufacturers Association is no more taking sides with the Opposition than it is taking sides against the Government. The Association has no politics other than the politics of endeavoring to secure better and still better government from whatever Party happens to be in power. Its constitution precludes it from being partisan, for its membership embraces Liberals as well as Conservatives, Free Traders as well as Protectionists. It is hostile to neither party as a Party, nor is it the slave of any political organization. It is glad to commend where it believes commendation has been earned, but at the same time it does not hesitate to criticize frankly and fearlessly where it believes the policy or lack of policy of any government has fairly invited criticism.

The jockey plies the whip not to punish his horse but to spur it on to do its best. INDUSTRIAL CANADA criticizes not to embarrass people, nor to hurt their feelings, but to show them how they can do better.

Correcting a Mistake.

NOT long ago the writer of this column inadvertently made an error in a statement he issued on the subject of war orders. A good many people had been talking to him in generalities about supplies for Canadian troops in England and at the front, which they understood were being purchased in the United States, when they might just as well have been bought in Canada. These same people were alleging that Canadian mills, that could have

handled the business satisfactorily, were meanwhile suffering from a shortage of orders.

It is not, and never has been, the writer's practice to trouble the Government with complaints that have no reasonable foundation. In the instance referred to he asked his informants for specific data, which, however, they were unable or unwilling to supply. Later on, when letters were received officially asking the aid of the Association in bringing about a correction of the alleged grievance, the writer received instructions to issue a general enquiry for details, the idea being to deal with the matter vigorously if it were found that the Government was neglecting Canadian interests, or to ignore the complaints altogether if those behind them could not or would not show where they had suffered.

The enquiry contained the statement that all supplies for Canadian troops, "after their arrival in England," were purchased by the War Office. In this it was wrong, for it is only after their arrival in France that our troops become dependent upon the War Office for their various requirements. So long as they remain in England they are supplied from the Canadian Ordnance Depot at Ashford, Kent, to which point all sorts of stores are shipped from Canada.

While the mistake was made quite inadvertently, and while it appeared to the writer to be a small matter, it was not so looked upon by the Government. In the minds of the latter there seemed to be a feeling that the circular was unfriendly, and that it was likely to make trouble unless the wrong impression it conveyed were corrected.

As evidence of our good faith throughout, we have pleasure in testifying to the good work which the War Purchasing Commission has done for Canadian producers.

A Record of Good Service.

FOR the first twelve months of the war, to July 31st, 1915, Canada's exports of manufactured goods to the United Kingdom amounted to \$50,373,074; for the second twelve months they aggregated \$202,973,346. For the first twelve months her exports of agricultural products were only \$97,657,594; for the second twelve months they reached the amount of \$275,849,761. The total exports of all classes from Canada to the United Kingdom were for the first period \$228,210,069; for the second period \$595,817,576. For the five years previous to the war the average of Canada's exports of all classes to the United Kingdom was only \$167,751,479.

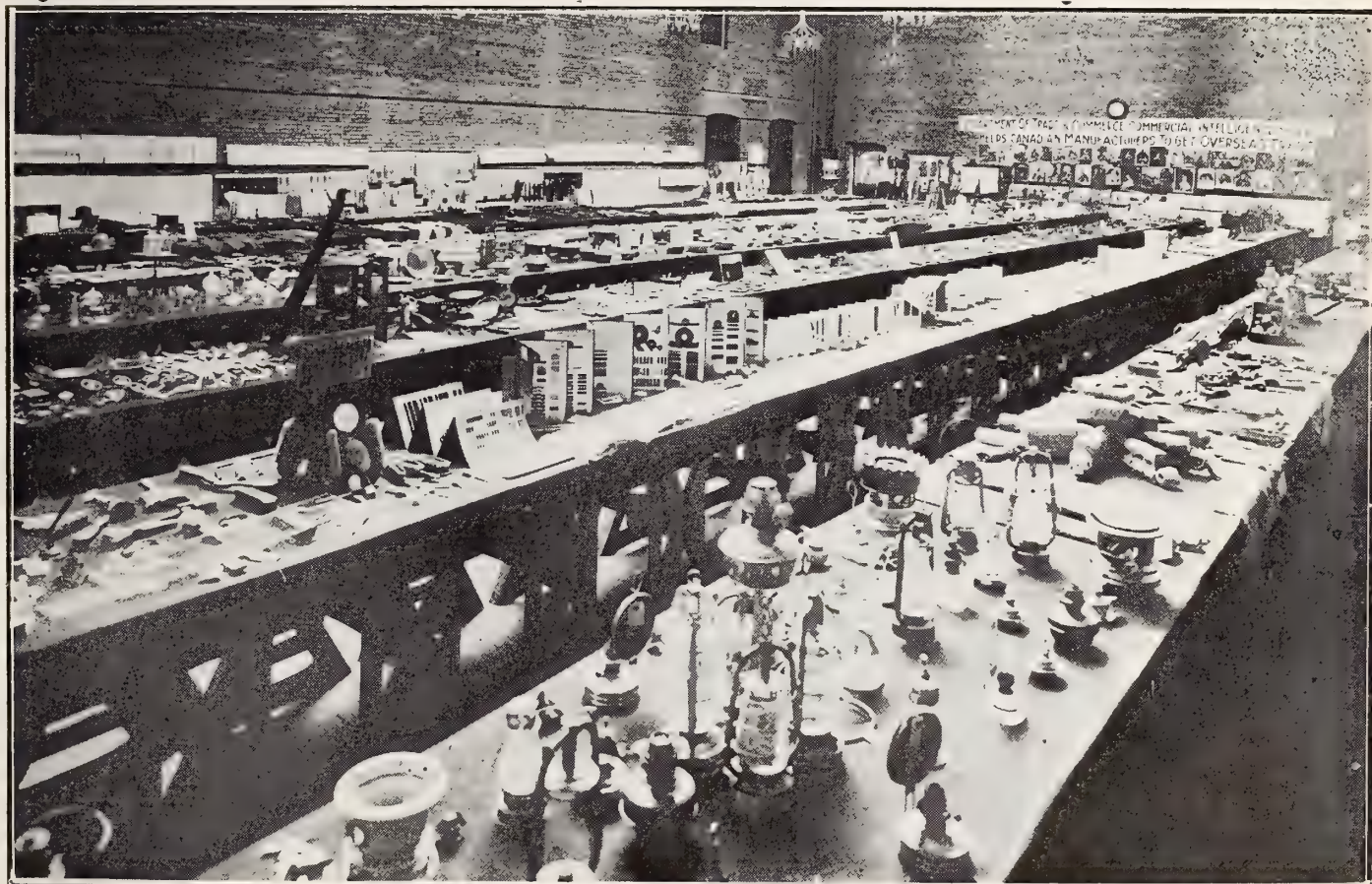
It will be apparent from the above that Canada hasn't fared badly in the matter of war business. In view of the difficulties that have been experienced in securing materials of every kind, and in the face of a steadily increasing scarcity of labour, her manufacturers and producers have done about as well as the most optimistic among them could have hoped for.

How much of the increase is due to individual enterprise, and how much to governmental action, it would be

difficult to say, but this we do know, that from the time Canada undertook to bear the entire expense of her expeditionary forces abroad, our Government has been indefatigable in its efforts to bring to Canada orders for supplies and equipment sufficient in amount to provide for all her forces' requirements. In this we believe they have fairly well succeeded. For obvious reasons Canada has not supplied any field guns, and very few technical instruments, but she has probably more than made up for any shortage in these directions by furnishing more than her quota of clothing, underclothing, boots, harness and various kinds of foodstuffs.

Neither the War Purchasing Commission nor the Imperial Munitions Board was in existence two years ago; now they are handing out orders at the rate of about a million dollars a day. In what seems a remarkably brief space of time they have grown from nothing to huge proportions. They have made mistakes, both of them, for they and their staffs are mere men, and as such are liable to err. But the good they have done has been great. They have well earned the gratitude of Canadian business interests, in whose behalf we do not hesitate to express appreciation.

We take it, however, that neither body pretends to be perfect, that both of them are anxious to make good work



THE ENEMY SAMPLES EXHIBITION IN TORONTO

View of a section of the display of Enemy Samples made in Convocation Hall, University of Toronto, October 23 to November 6 inclusive

It ought to be further stated that with respect to all war supplies for which the British Government finds it necessary to go outside the United Kingdom, our Canadian Government, by its insistence and persistence, has secured recognition of the principle that the Overseas Dominions should always be given the first opportunity of tendering, in preference to neutrals. This principle, we believe, is being observed in actual practice as far as is feasible.

In so far as the carrying out of these policies has been made difficult by problems of transportation and finance, it has been the constant endeavor of our Government to co-operate with the British authorities in effecting satisfactory solutions.

better, and will welcome suggestions or criticism designed to aid them in attaining that object. Honest mistakes are easily made, and just as easily forgiven. It is no sign of weakness in bodies such as these to admit their mistakes, but it is a sign of weakness to resent all criticism and to deny its pertinence, when a frank admission of error would clear the way for the restoration of good feeling.

On the Need for Keeping Everlastingly At It.

A PROPOS of the additional credit recently established in Canada for the purpose of maintaining our production of munitions, a note of warning has been sounded

by some manufacturers who do not look on the munitions industry as an unmixed blessing. They point out, with some measure of justification perhaps, that sooner or later munition orders will stop; when they do stop there will be an immediate diminution in production, terminating in a total cessation in perhaps two or three months. This in turn will lead to tens of thousands of work people being thrown out of employment.

In anticipation of that time, would it not be well, ask these manufacturers, for Canada to content herself with supplying only such munitions and other war material as she is asked to supply, without going out of her way to seek orders? To expand unduly an industry that is recognized to be transitory is simply to accentuate the difficulties that will inevitably have to be met in the process of readjustment. Meanwhile the maintenance of these transitory industries, in the face of a steadily increasing scarcity of labor, is seriously handicapping industries that are catering to the requirements of our civilian population, which industries, be it remembered, will be the mainstay of our prosperity when the war is over.

If it were clear beyond question that the war was nearly over, and if convincing evidence could be furnished that our reserve stocks of munitions, equipment and supplies of every kind were now sufficient to see us through, it would undoubtedly be the part of wisdom to apply ourselves promptly and seriously to the task of readjustment. But the war is not over. When it will be over no one can tell. One thing only is clear, and that is that the fight will not be finished until we have definitely won, until we have achieved such a victory that we can dictate peace on our own terms. We are nowhere within sight of that goal as yet. Under the circumstances would we be justified in relaxing our efforts even in the slightest degree? Is our prosperity in the period immediately following the war of such paramount importance to us, that in order to ensure it, we can afford to take a chance that may lose us the war? If we do not win, we lose not only our prosperity but our liberty as well. If we win, we preserve that with which we can achieve prosperity, even though we may temporarily sacrifice it.

Looking at it from another standpoint, would it be fair, would it be honorable, for Canada at this stage to endeavor to steal a march on her Allies in the matter of export trade to neutral markets? They all want to receive their fair share of the foreign business of which Germany will surely be deprived. Canada perhaps more than others looks forward to the situation which peace will open up as one affording her an opportunity to expand her sales abroad. But Canada ought to be above trying to advance her own interests at the expense of her friends and protectors by withholding potential aid in a manner that will automatically add to their burden. Her participation in the war to date has not been on a scale to justify her now in resting upon her oars.

On Treating Men Like Men.

WHILE on this subject of munitions, we venture to remark that it is time someone did some very plain talking with regard to the cavalier methods employed by the Imperial Munitions Board. The Board has done and is doing splendid work. The production it has secured from Canada must be as gratifying to the War Office as the volume of its orders has been to the manufacturers who received them. Likewise the decreasing scale of prices at which it has been able to get the work placed is as much a testimony to the Board's business acumen as it is to the efficiency of Canada's producers. We mention these things to make clear our appreciation of what stands to the Board's credit.

We believe it to be true, however, that the results the Board has been able to show have frequently been in spite of, rather than because of its methods. In ordinary business a contract is a contract; in the munitions business a contract may be only a "scrap of paper," if it suits the Board so to regard it.

A firm receives an order to make so many shells of a certain type, at such and such a price, and is given a specified time for delivery. Before the order is half executed, before the time is half expired, the firm may be peremptorily instructed to complete the balance according to an altered specification. It is not a case of "Can you oblige us by meeting the new condition that has arisen," or "Do the best you can with it and we will adjust the price afterwards." A contractor must do as he is told, or be content to forego his chances of further business. The new specifications may involve extra operations that will cut down his daily production 20 to 25 per cent.; it may necessitate the purchase of new machinery; in any case it means a considerable loss of time, and in these days of high wages time means money. But whatever the cost or inconvenience he is put to, he is expected to fill the balance of the order at the price stipulated in the contract. As a mark of special favor, he may get his time extended, but the Board turns a deaf ear to any claim for extras.

So long as the Board can get away with this sort of thing, they are enabled to show a lower purchasing cost, and so to add to their reputation with the War Office. But we cannot believe that the War Office would want anyone to do work for them at a loss. Nor do we believe the Board could secure anything like the production it is now securing in Canada but for the fact that it is dealing with contractors many of whom would rather pocket a loss than do anything that might injure the cause.

War conditions may often demand shortcuts in business and the rigid disciplining of shirkers and grafters. But just as the soldier in the trench responds to considerate treatment from his officers, so the munitions contractor would work for the cause with greater zeal if he always found himself treated like a man.

Do Insurance Companies Need Protection?

THE old question of taxing the premiums paid to unlicensed insurance companies has bobbed up again, this time as the result of representations made to the Ontario Insurance Commission on behalf of the Canadian Fire Underwriters' Association.

As a matter of tactics, no fault is to be found with the C. F. U. A. for asking protection against outside competition, and thus endeavoring to distract attention from matters the Commission was really appointed to investigate but which the Underwriters might prefer to keep in the background. Going a step further, and expressing ourselves with all frankness, we can see that the C. F. U. A. have at least some reasonable grounds upon which to base a claim for consideration.

They are required to maintain deposits at Ottawa; unlicensed companies of course do not do so. Their income is subject to special war taxes which unlicensed companies in the United States escape, though English companies, unlicensed in Canada, probably pay as heavy if not a heavier tax to the British Government. Their premium income is further taxed to provide funds for the maintenance of the office of the Ontario Fire Marshal; unlicensed companies escape this as well. As good citizens they contribute to the Patriotic and Red Cross Funds, pay their municipal taxes and provide employment for large numbers of Canadian men and women; the operations of unlicensed companies are no benefit to Canada in any of these ways.

But are the Underwriters reasonable in contending that it is just as much in the interest of Canada to protect their business, by taxing unlicensed premiums, as it is to protect the manufacturers' business by means of the customs tariff? Are the cases really parallel?

Both the insurance companies and the manufacturers are employers of labor, and in so far as the object to be served is to increase employment in Canada, the cases may be parallel. But there are certain important elements of difference. Before a manufacturer can become an extensive employer of labor he must provide himself with a building, install a power plant and equip it with machinery, all at an expense which means business to others, and which at the same time tends to anchor him, and to make him a permanent asset to the community and to the country. When he commences manufacturing he immediately becomes a purchaser of raw material; if he buys in Canada, that means more business for Canadian producers; if he imports, he contributes to the revenue of the country through the customs tariff. As his organization grows he sooner or later reaches a point where he begins to export a portion of his output; in that case his enterprise gives Canadian labor a certain measure of dominance over foreign labor. An insurance company on the other hand is able to commence operations without any real stake in the country. A rented office will house its staff, and if business is unprofitable it can retire from the field without much sacrifice. It purchases no material which it advances

in value before selling again, as the manufacturer does, and when it exports insurance, as it sometimes does, its market is with these same unlicensed companies to which it thinks the manufacturers should have access only upon the condition that they pay a tax.

Then, too, there is this very important difference. The manufacturer receives his protection under legislation that provides for its withdrawal whenever it becomes apparent that he is combining or conspiring with other manufacturers to secure undue advantage from the tariff at the expense of the consumer. Not only that, but he is subject to fine or imprisonment under the Criminal Code for combining in restraint of trade. The Ontario Insurance Commission is now engaged in an investigation to determine, *inter alia*, whether the C. F. U. A. really is a combine. Until that question is disposed of, it ill becomes an organization controlling 80 per cent. of the insurance business of Canada to ask for protection.

Protecting the Buyer.

CONSIDERING the fact that the licensed companies provide us a market where we can buy insurance at our very doors, and considering the further fact that in offering us that service they are put to an expense which unlicensed companies escape, we think it only right that Canadian business men should give them a reasonable preference at all times. We might go further, and condemn as unpatriotic the action of any man who, merely to save a few cents, would pass by companies that are contributing to our war revenues and place his insurance with foreign companies that are not.

But what about the firms (and there are many of them) whose risks are of a kind that the C. F. U. A. either do not want to carry at all, or are willing to carry only at rates that are intended to be prohibitive? Such firms may be so situated that they have to have insurance. If they cannot purchase it in Canada, is it right that they should be taxed when going outside for it? Or what about another class of firms, who have to carry so much insurance that it is impossible to get it all taken up by the companies licensed in Canada? Is there any particular object in penalizing them on the portion they are compelled to purchase outside the country?

Many firms, operating sprinklered risks, find it advantageous to insure with the New England Mutuals, not so much because of the actual saving in premiums they are able to effect, but because of the inspection service afforded by those companies, and the greater protection against fire thereby secured. The licensed insurance companies furnish no such service. Is it unpatriotic to adopt wise precautions against fire, and is a man to be taxed because he avails himself of the best service designed to that end?

The present situation, while not altogether ideal, might be a great deal worse. Roughly speaking, the licensed companies do 80 per cent. of the Canadian business. Their rates are held down by the competition of the unlicensed companies, which competition, be it remembered, is the

only protection the purchaser of insurance has against extortionate rates. That competition may compel the licensed companies to quote rates that are less profitable than they would like them to be, but it is a fair inference that the business is still worth while, for if it were not they could easily retire from the field. If unlicensed premiums were taxed in the face of such a situation, it would simply mean an added percentage to rates that are already profitable, and an added burden in the case of those who are compelled to use the unlicensed companies in any event.

The National Thrift Campaign.

IT is to be hoped that the National Thrift Campaign, which a Committee of the Canadian Bankers' Association are undertaking at the suggestion of the Finance Minister, will be aggressively handled, and linked up with the definite advocacy of certain channels for the safe and profitable investment of small sums of money, for if there is one lesson more than another that the people of Canada need to learn to-day it is the lesson of economy.

Never were wages so high in this country as they are at present. The air is full of complaints about the high cost of living, but notwithstanding the advances that have taken place in the price of necessities, there has never been a time when wage-earners spent their money so freely for luxuries and for entertainment. A piano dealer tells us he has just finished the best year in the history of his business; his sales were mainly in low and medium-priced instruments that working people purchased on the instalment plan. A manufacturer whose employees run into the thousands writes us that the average weekly wage of his last payroll was \$27.00; the shopkeepers roundabout report that their customers are demanding the best of everything. Girls in munition factories, who formerly earned \$8.00 to \$10.00 a week and who are now making as high as \$18.00, are blossoming out in expensive furs. Meanwhile the picture shows are multiplying, and almost any evening one may see queues of people anxious to spend their money, lining the sidewalk for half a block. The more well-to-do classes are similarly patronizing the higher priced theatres quite freely, and driving up in limousines where they used to be content with street cars.

But a day is coming when money will not be so plentiful as it is now. Less than two years ago we were seriously advocating soup-kitchens. A year after the war is over the pendulum will very likely swing back to soup-kitchens again. What preparations are Canadians, as a people, making against unemployment and hard times? No one can say that the future is so bright as to make such preparations unnecessary, yet no one seems to be willing to forego the pleasures and luxuries of the moment.

There are wonderful possibilities ahead of the thrift campaign, particularly when considered in the light of the millions of further credit which our Canadian Government could secure at home for war purposes. In this connection, we are prompted to suggest the desirability of a Federal use of \$10 bonds. Both as a security and as

profitable means of investment, it would appeal to thousands of people to whom a \$100 bond looks like an impossibility. It would also carry a strong appeal to the loyalty of a great many who would like to assist in carrying on the war, but whose means were too limited to enable them to become subscribers to previous issues.

The habit of thrift would receive a decided impetus from a move of this kind. As an adjunct to the campaign it would seem to be well worth trying.

Public Ownership of Railways Under a Democracy.

ONE of the most convincing arguments against Government ownership and operation of railways is strikingly illustrated by what took place a few years ago in the case of a section foreman on the Intercolonial who made up his mind that he wanted three weeks' holidays. Instead of asking for them in the usual way, and being glad to get them when it was practicable for the management to oblige him, he simply told the division superintendent that he intended leaving on a certain date, to be gone so long. He was promptly informed that if he did anything of the kind he needn't come back at all, that his job would be filled. "Oh, no, it won't," replied the foreman, "Bill ———" (mentioning the name of the member of Parliament for the district) "will look after me all right."

He took his holidays as he had planned, was promptly struck off the roll for doing so, and a new man was put in his place, all according to schedule. Also, according to schedule, the member intervened for him on his return, and forced the division superintendent not only to take him back but to pay him for all lost time while the dispute was being settled.

Under an autocracy such as Germany and Russia have, government ownership and operation of railways can be worked out in a thoroughly businesslike manner, with an eye single to the interests of the public and of the State, but under a democracy such as we have in Canada it would degenerate into a political machine, to be exploited for the benefit of its employees. If the railways of Canada were all nationalized, and their employees all unionized, the latter would be the real rulers of the country, not the elected representatives of the people in Parliament.

Tariffs and classifications would be fixed, not as they are at present, upon what the traffic can reasonably bear, but upon the votes that any contemplated change would probably influence. If, for instance, New Brunswick potatoes were driving Ontario potatoes out of the Ontario market, and Ontario farmers began kicking up a row about it, demanding intervention on the part of their members in Parliament, up would go the westbound rate on New Brunswick potatoes. Or if a Winnipeg packer managed to secure a nice local corner on hogs which was in danger of being broken by importations from Alberta, the aid of his member would be promptly solicited in an effort to effect some subtle change in the conditions of carriage that would protect him without giving the game away.

Private ownership may have its weaknesses, but where its operations are subject to control by a Commission that is independent of politics, we would rather take our chances with it than switch to public ownership and so expose ourselves to the political consequences thereby involved.

ECONOMY OF MECHANICAL CONVEYORS

Many Transportation Problems Solved by the Use of Special Carrying Apparatus

By HENRY J. EDSALL

(Article and illustrations by courtesy "American Exporter.")

A GREAT deal of attention has been given in recent years to improvement in methods of handling various materials in bulk; that is, in the free state, like coal, ore and grain. The large quantities of materials handled in this form during transportation from one place to another, and in the course of various manufacturing processes, are a great incentive to the improvement of methods, as the reduction of a few cents a ton in the cost of handling will frequently add up to a large total in yearly saving.

Another branch of the transportation problem is the handling of separate pieces or packages. This is quite a different matter from the handling of bulk materials, and the devices used to accomplish the desired results are of a different type. The aim, in both cases, is of course, to do the transporting with the minimum expenditure of labor and power.

With bulk materials, conveyor equipments handle the materials automatically and continuously, and the only labor ordinarily required is for getting the material into the feeding end of the system and for general supervision and care. When it is necessary to pick up the material in buckets, the amount picked up at each load is large in proportion to the number of men who operate the system.

In the same way the secret of reducing the cost of handling separate pieces or packages is to handle them as automatically as possible, and to keep them moving continuously in the same direction, or to increase the number of pieces in each load. The constant flow of a stream of water, even though it is small, will add up to a large amount in a day, and if the attempt is made to keep up with it by carrying water in buckets it would require a small army of men to compete with even a small stream. If, however, these buckets could be filled and loaded on a conveyor so that they would be emptied automatically one after another, at close intervals, the conveyor would take the place of a large bucket brigade in transporting the water.

When a man is wheeling goods on a truck each load requires his time for the loading, transporting, unloading and the return of the empty truck. If he is moving the goods from one floor to another on a platform elevator, this means that the elevator is employed for the time of elevating or lowering the loaded truck and for returning the empty truck to the starting point; with the delays incident to waiting for

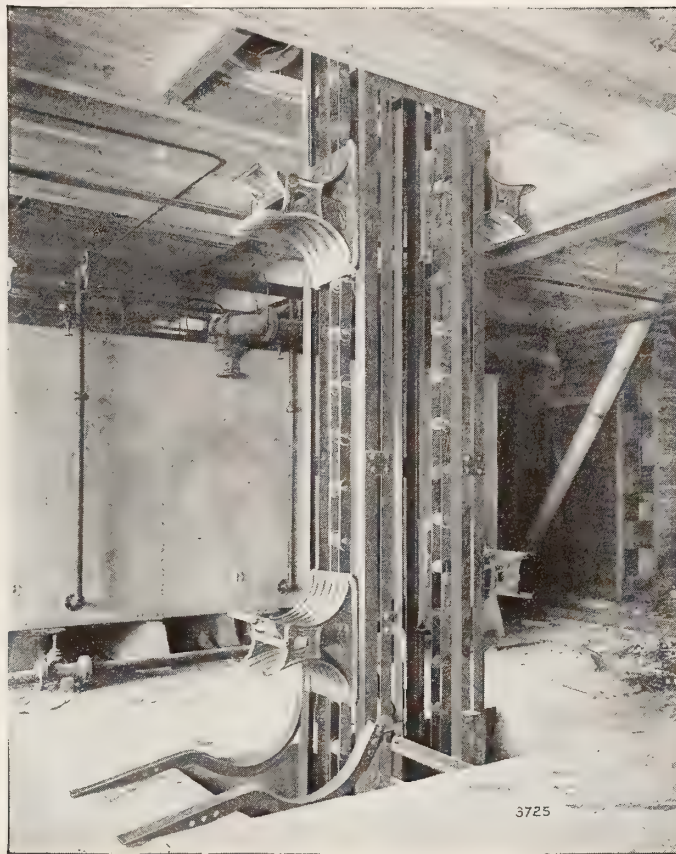
the platform to come along. As a rule it also means the charging up of the time of an elevator operator, in addition to the time of the man with the truck, and the power is usually quite an important item on account of unbalanced loads.

A conveyor can be made to do not only the transporting, but also the elevating and lowering, and the only labor necessary is for loading the articles and removing them as they are delivered at the discharge point. The loads on the down side often balance the ones going up, so that little power is

required, and sometimes where it is entirely a lowering operation, no power at all is necessary, and the handling is rapid and continuous.

One of the commonest problems is the elevating of kegs, barrels, boxes, sacks or bales from one floor to another. For accomplishing this, rigid arms are attached at intervals to one or more chains which are made to move continuously in one direction. These arms coming along, one after another, only a few seconds apart, pick up their loads at the lower floor and discharge them as they turn around the sprocket wheels at the upper floor.

When round packages are handled the arms are made curved, but for handling boxes or other rectangular packages, the arms are made straight. If barrels or sacks are to be elevated and discharged at several points a tilting type of arm is used, with a trigger arranged to engage with a trip, set at any floor, so as to discharge at that particular floor. A machine of this type is shown herewith. A barrel or sack is placed on the



Barrel or Sack Conveyor

Arms for hoisting may also be used for lowering if they are made double as in the case of the conveyor shown.

curved skids or rests at the floor line, and as an arm passes it picks it up and elevates it until the trigger engages with the trip so as to tilt the arm forward and discharge the load. The arms are made double so that they can be used for lowering also. When used in this way the barrels are rolled directly onto the arms as they pass the floor and picked off by skids, between which the arms will pass, but which are too close together to allow the barrel to get through.

Another type of machine which is used for handling barrels, boxes, bales and various articles is of the suspended tray type. These machines have trays or carriers attached to two chains by means of pins, so that the bottoms always remain horizontal, instead of turning over as the chains pass around the sprocket wheels at head and foot. If the bottoms are made solid the articles handled must be placed on them and



Light Canvas Belts for Handling Packages

Belts are supported on idler rollers placed at frequent intervals on the carrying run and two or three times as far apart on the return run.

removed from them by hand. If, however, the bottoms are made with a cross bar, and fingers spaced so as to have slots between them, they can be made to pick up the load from a loading point and discharge it at any one of a number of unloading points. In order to accomplish this each loading point is arranged with fingers which extend into the slots of the trays and on which the load rests until it is picked up by a tray. At the unloading points other fingers are arranged in a similar manner to receive the loads, but these fingers are set at an incline so that the barrels or other articles will roll or slide down them and thus get out of the way of the next tray. Where there are small loading and discharge points the loading and unloading fingers are hinged so that the ones that are not in use can be thrown back out of the way.

Light canvas belts are often used for handling packages. Such belts are supported on idler rollers placed at frequent intervals on the carrying run and two or three times as far apart on the return run. In the horizontal runs this type of package conveyor is often hung overhead out of the way, but with the top and sides open, so that the packages may be tossed onto the belt from any point underneath and along its route. Then, too, they are sometimes run under the floor or behind benches, with chutes arranged to feed them.



Conveyor Handling Rolls of Linoleum

The rolls are carried in sets of wooden saddles attached to a single chain and supported on rollers which roll along on tracks.

A good example of a machine of the type with separate carriers spaced at intervals is illustrated herewith. This conveyor handles rolls of linoleum from an upper floor across part of a yard and into a warehouse and shipping room. The rolls are carried in sets of wooden saddles, attached to a single chain and supported on rollers which roll along on tracks. At the foot of the machine the rolls go off onto a set of concave rollers which are automatically tipped over so as to roll the linoleum off onto a table. A conveyor of this type has many cost-cutting possibilities in plants where material in cylindrical form is handled.

In handling truck loads of goods and returning empty trucks it frequently happens that it is necessary to take them up inclines that are so steep that the loads which a man could push up would be very small, or in some cases it is entirely out of the question for a man to push the truck up without help. To get around this difficulty truck hauls have come into use, and in some cases they are used in place of a platform elevator to get trucks from one floor to another.

Like the moving stairways, these machines have many times the capacity of an intermittent platform elevator, which



Horizontal Haul

Accommodates trucks both going and coming. An overhead endless conveyor chain tows the trucks.

has to make a round trip before it can again be loaded at a certain floor, whereas the truck haul can take care of the trucks, one after the other, at close intervals and the loads move constantly in the desired direction. Where a great many trucks are handled on a steep incline a separate machine moving in the opposite direction is sometimes used for the return of the empty trucks. There is considerable use for this type of conveyor on a wharf for taking trucks back and forth between the decks of vessels and the wharf. The outer ends of these machines can be raised or lowered to suit different heights of decks and to allow for the rise and fall of the tide. By the use of this type of equipment the size of the load which each stevedore can handle is greatly increased.

In a horizontal haul, which may also be used for small inclines, one side is for the trucks going in one direction and the other side for the ones coming back. The trucks are pulled along by chains attached to an endless conveyor chain operating overhead and supported on rollers which roll on angle iron tracks. The chains for hitching fast to the trucks hang down from the overhead chain at intervals and the trucks can be easily attached to them and will then travel around the circuit until they are released.

Slat conveyors lend themselves to the conveying of barrels. On one such moving platform, shown herewith, used to convey barrels over a comparatively long haul, the slats are attached to two roller chains, which roll on steel tracks on both the carrying and return runs. Conveyors of this type are frequently installed for handling miscellaneous freight between buildings on opposite sides of a street. Rather an unusual style of conveyor of this same general type is used at the plant of a well-known ink manufacturing concern. Here trays of ink bottles are carried on a moving platform made up of rectangular-shaped pieces with corners clipped to enable the turning of sharp corners.

A belt conveyor is used for handling husked corn in the husking shed of a large canning factory. The huskers are paid on the piecework system, and as each box of corn is checked off it is dumped onto the belt, from which it passes on to an inclined machine, and then to a distributing conveyor on the top floor of the factory. Here it discharges on the various tables alongside the machines which cut the corn off the cob. From the cutters it goes down through the silkers, who remove what is left of the silk, and on down into the preliminary cookers and fillers.



Handling Husked Corn

Corn canning factories find this belt conveyor a very profitable and efficient method.



Moving Platform for Conveying Barrels

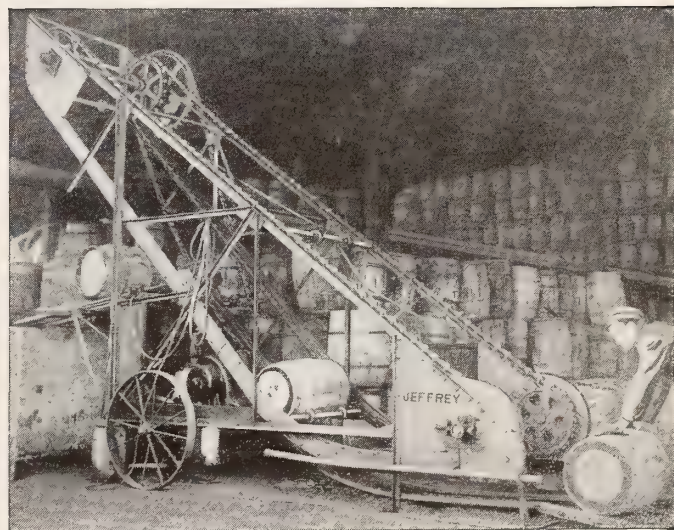
The slats are attached to two roller chains, which roll on steel tracks on both the carrying and return runs.

In a large strawberry preserving plant six lines of conveyors take care of the strawberries, the hulls, the baskets and the trays in which the baskets are handled. The attendants who do the hulling have no necessity for moving around and no excuses for delays, but can remain seated on the stools alongside the hulling tables and keep constantly at work.

Newspapers and magazines are now handled quite extensively with continuous moving machines of the tray type. The large output of some of the modern press rooms requires a high-capacity machine and one that is as automatic as possible. The trays move along in front of the presses within easy reach of the attendants who take the papers from the flys. The trays are of the slotted bottom type, so that when they have passed around the upper sprocket wheels in the delivery room and started to descend they deposit their stacks of papers on slowly moving belts, which extend into the slots of the trays. The attendants take them from the moving belts and place them on the delivery table. One newspaper has three machines, with a total of seven loading points, so that there is a loading point within easy reach of all the flys of the presses. These machines have a combined capacity of two hundred and fifty thousand twenty-four-page papers an hour.

A line of portable conveying and stacking machines designed to meet the requirements of practically all industries where bags, barrels, boxes and bales have to be handled and piled has lately been developed by a well-known manufacturing concern. Two styles of conveyors are built, one a portable arrangement, consisting of 20-foot sections mounted on wheels, while the other, which is designed primarily for barrels, has two points of discharge, thus enabling it to be used for the delivery of barrels to the shipping platform or for stacking them in tiers, one upon the other.

In the portable conveyor for boxes the work is done by a belt 18 inches wide travelling at the rate of 125 feet per minute. This conveyor has sprockets on the end shafts of each section to enable the adjacent one to be driven, all of the sprockets and chains being protected by guards. The conveyor rolls have flexible jointed bearings, and the channel stringers are mounted on ball-bearing casters, which are relied upon to make the sections readily portable. The driving motor is mounted either above or below the belt, and the driving section can be placed either at the ends or at any intermediate point. This conveyor has a total length of 140 feet,



Portable Conveyor

Handling 500 pound barrels at the rate of one every 20 seconds.



Conveyor for Industrial Plants

Mounted on wheels to give portability and having an arrangement for coupling the sections together.

and will handle hourly 1,500 packages weighing 80 pounds each, spaced at 5-foot intervals on the belt.

The barrel conveyor is designed to engage the barrel after it enters the guideways, by cross bars and rollers. In this way the barrels are not dragged up the incline, but are rolled to the discharge points at heights of five and eight feet respectively above the ground, which permits the barrels to be placed on the shipping platform or stacked in tiers. This arrangement effects a considerable reduction in the amount of power required, as the friction of the cross bars is decreased by their rolling on the barrel. A 2-h.p. motor drives the conveyor, which will handle 500-pound barrels at the rate of 180 barrels per hour. The entire mechanism is contained in a steel frame balanced on wheels 36 inches in diameter, and it is possible for one man to move the machine.

A stacking machine has been developed for handling miscellaneous freight on an apron 24 inches wide. This stacking machine will deliver to a greater height than the barrel-conveying machine, the delivery limits being six and 14½ feet, respectively. Bags and boxes weighing 340 pounds each can be handled and three men are required at the discharge end to prevent congestion.

The problems which can be satisfactorily solved by the use of continuous conveyors are obviously numerous and varied. Two of the principal advantages are the automatic operation and large handling capacity of the machines. These two advantages mean that an enormous number of articles can be handled in a given time with a minimum amount of labor. The amount of power required is, in most cases, astonishingly small on account of the slow speeds used and on account of balanced loads when elevating and lowering.

CHANGE IN STOVE INDUSTRY.

Announcement is made this month in Montreal that the A-B Stove Company of Canada, Limited, 323 Aird Avenue, Maisonneuve, have disposed of their entire business and plant to the Canada Stove & Foundry Company, Limited, Ville St. Laurent (near Montreal), P.Q. The Canada Stove & Foundry Company, Limited, have just completed the erection of several large new buildings to their present plant to accommodate the space required for the manufacturing of gas ranges.

The well-known line of "A-B" gas ranges will continue to be manufactured and sold by the Canada Stove & Foundry Company, Limited, and the high standard of materials, designs and finish will be followed out by the new company. W. O. Henderson, who has had full charge of the business of the A-B Stove Company of Canada, Limited, during the past

five years that this line has been manufactured in Canada, will have charge of the sales department, and continue to look after the details and manufacturing of gas ranges.

Several progressive Canadian business men, associated with some United States men, have formed a company for the manufacture of gelatines, isinglass and other materials of a similar nature. Most of these products formerly came from Germany but are now being made in the United States, and we hope that the new Canadian company, with its \$250,000 capital, will be able to produce these goods economically in Canada. The name of the company is the Canada Gelatine Co., Limited, head office, Brantford.

AN ACCIDENT PREVENTER.

Explanation of a Scheme Devised by an American Safety Inspector.

Below appears a reproduction of a photograph of what is described as an "Accidentmeter." It was invented by J. A. Voss, assistant safety inspector of the Inland Steel Co., Indiana Harbor, Ind., as an aid in reducing accidents. The "Accidentmeter" is placed at the foot of a viaduct at the entrance to the plant where everyone who enters can see it. It shows the total number of lost-time accidents for the previous month on the left hand side, and on the right hand side the lost-time accidents for the current month. Every time a lost-time accident occurs the meter goes up and the men, on their way to work, can see how many accidents occur each day. The men are very much interested in the meter and it is a daily reminder to every man as he enters the plant on his way to work to be careful and to avoid accidents. Bulletins are posted alongside the meter and prizes are offered for safety suggestions.

Mr. Voss says that the device has aided greatly in reducing accidents, the workmen becoming keenly interested in keeping the meter down.



AN ACCIDENTMETER

A device which has helped to reduce accidents in a large American plant



Homestead Lands on Spring House Prairie

THE PACIFIC GREAT EASTERN'S TERRITORY

Physical Characteristics of the New Rail Route across British Columbia

By R. MACKAY FRIPP, L.A.C., F.S.A.

THE commercial importance to British Columbia of the new Pacific Great Eastern Railway is not easily overestimated. The three great transcontinental railway systems which have their Western terminals at Vancouver and Prince Rupert leave a huge triangle of the province untouched and scarcely influenced by their operations, for the Canadian Pacific Railway entering at Rogers Pass proceeds by the most direct route to salt water at the southern extremity of British Columbia; swinging almost due south at Ashcroft it turns its back on the great interior districts of the Lillooet and the Cariboo. The Canadian Northern Pacific entering at the Tête Jaune Pass follows a southerly line to Kamloops, from which point it practically parallels the C.P.R. to Vancouver. The Grand Trunk Pacific Railway also enters the province at Tête Jaune and proceeds N.W. and W. to Prince Rupert, just impinging upon the northern borders of the Cariboo.

A glance at the map will show a vast territory lies between the Pacific Ocean and the course of these great railways. To connect this territory with Vancouver and to tap the latent resources which it has long been known to possess, the McBride Government encouraged and supported the construction of the Pacific Great Eastern, which, when continued to its ultimate destination beyond Prince George to the Peace River district on the boundary between British Columbia and Alberta, will be over 800 miles in length and will bisect the entire province from north to south.

Between Vancouver and Prince George the new railway traverses three districts of markedly different character. The first is the Vancouver-Squamish-Lillooet section, 127 miles, and for the greater part of that distance the road is within the wet coast belt. The next section between Lillooet and a point some distance beyond Clinton traverses the interior dry belt, and the third section from Alexandria to Prince George

lies within the northern interior wet belt. There are, also, two other distinct climatic regions tributary to the P.G.E., which will be attended to later, making five in all with the same number of forest types.

The southern coast type from Squamish to Lake Anderson has an area of 1,800,000 acres, mountainous, well watered and heavily timbered with Douglas fir, cedar, spruce, hemlock, with some white pine and white fir, all of which are common to the coast, and of the greatest commercial value. The average stand per acre is estimated at 20,000 sup. feet. There is a large mill at Squamish as well as a shingle mill, and at Cheakamus and Mons the contractors for the pine have built mills for the production of construction material.

After passing Lake Anderson the railway enters the interior dry belt, where the total tributary area is stated to be two and a half million acres. The timber here is of small commercial value, there being no great quantity fit for export, but for local purposes the supply is of great value.

The third great tract traversed by the railway from Alexandria to Prince George in the upper basin of the Fraser is part of the great interior plateau of British Columbia, but at a lower elevation, and has good soil and an annual precipitation of about 25 inches. The winters are long and cold, with heavy snowfall, and in many parts the forest is heavy, stands of 20,000 sup. feet per acre being not rarely found, while 10,000 sup. feet is common.

West of the Fraser is the interior plateau, which extends across and east of the river from 70-mile House to Alexandria, the railway running through it between these points. It is high and uneven, deeply scored by the rivers which drain it. The winters are long and cold, the summers warm and dry, the precipitation only from 10 to 20 inches. The forest growth is, consequently, neither rapid nor of great individual develop-

ment; the principal species are the large pole spruce and balsam, and some Douglas fir in the moister situations. Lodge pole is dense everywhere, and though at present it is used only for railway ties, posts, poles, etc., it is probably quite suited to pulping, being a near relation of the Eastern jack pine. About thirteen million acres are considered tributary to the P.G.E. Railway.

The fifth and remaining type is a section of the interior wet belt, containing about two and a half million acres tributary to the railway, of which it mainly lies east, about the Horse Fly River and Lake, Quesnel River, etc. Here the precipitation averages 40 inches, and the long-growing season produces a forest which for growth and density is second only to the Douglas fir coast type.

With the railroad completed to Prince George there will be many opportunities for lumber mills to meet local demands created by increasing settlement and for export to the prairies.

There is the following estimated water power available in the Squamish-Lillooet Section: 150,000 h.p. on the Cheakamus, 16,000 at one point on Green River, 4,000 on Cayoosh Creek. All along the route of the P.G.E., from Cheakamus to Lake Anderson good water power is available in lesser quantities.

The greater portion of the first section contains limited areas of agricultural land, the best and most important area of any extent being the Pemberton meadows, where it is estimated that 40,000 acres are available, admirably suited to small mixed farming. The land is deep and rich. The rainfall is sufficient and the climate pleasant throughout the year. Some settlement has taken place and there are some old-time

ranches, which proves the value of the district. Along the numerous lakes there are small areas of easily-cleared land. All the way to Lillooet after crossing the Cheakamus Canon there is settlement dotting the line of railway but, like the coast lands in general, it cannot be regarded very seriously from an agricultural standpoint. The real wealth is to be found in the forests and probably in minerals. It has a future as a splendid playground for the artist, the tourist, the mountaineer and the sportsman.

When the line, having negotiated the engineering difficulties presented by the passage through more than a hundred miles of mountainous country, finally emerges from the Coast Range and debouches into the wide valley of the Lillooet, a country of very great and varied agricultural possibilities is reached. This country lies within the dry belt, is lightly timbered, except in smaller patches, for the land is, generally speaking, open with sage brush and a scattering of balsam. Irrigation is necessary and there is ample water available for the lower lands. The upper benches are suited to dry farming, which has been proved successful. Fruit is of the finest qual-

ity, quite equal to that of the famous Okanagan country, the heavy crops of melons, tomatoes and potatoes already finding their market in Vancouver. Some grapes of good quality are grown near the town of Lillooet. There is good stock country in the back benches, and there are excellent roads.

The Chilcotin country, lying west of the Fraser, is very similar but higher, is ideal stock and sheep country, and contains considerable areas suited to fruit and other small farms. Cattle require winter feed for about three months; prairie hay crops grow twice annually and there are large meadows of wild hay and alfalfa. Irrigation is required for crops, but there are many streams and water is easily obtained where wells have been sunk. There is some excellent dairying country, and the Government reports say that land for pre-emption is "plentiful." Where the land between Clinton and Prince George is clad with lodge pole pine the clearing is easy. There are fine bottom lands that can be brought under cultivation with comparatively small expense.

From Lillooet to Prince George there are excellent opportunities for every variety of agricultural enterprise, from fruit growing to poultry raising, to sheep and stock breeding, from mixed farming and dairying to dry farming. The coast cities provide a market that absorbs more than twenty million dollars' worth of imported produce annually. The prairies offer practically unlimited markets for fruits. Now that transportation facilities are, or soon will be, provided, for both political parties seem to be agreed upon the necessity for completing the P.G.E. Railway from Clinton to Prince George without delay, the permanent way being formed and ready



Looking back from Lillooet Station into the passage of the Cascades

for steel, there will be opportunities for small lumber mills, shingle mills, fruit box factories, the sale of agricultural implements of every description, machinery and wagons. A considerable business has been done already in autos. Sporting goods, small boats with and without motors, should find a sale at many points where there are chains of navigable lakes. Anderson Lake is 21 miles long, Green and Seton Lakes are large sheets of water and there are many others.

The latest Government reports on mining indicate greatly increased activity. Already machinery is going in over the rails. The three mining districts of Vancouver, Lillooet and Cariboo cannot fail to derive great benefits from the railway, for up to the present machinery and supplies could be taken in from the coast to many interior points only by wagon and pack trail, or by the old Cariboo road from Ashcroft, and the heavy freight expenses have, in consequence, prevented any very extensive development. With the advent of cheap and rapid transportation, the equipment of mines is certain to follow and the cost of living and consequently of labor be very



Trestle over the Cheakamus Canyon



Typical view along the line of the P.G.E.

greatly reduced. Until this is brought about mining will remain neglected to a great extent. Three dollars per hundred for freighting supplies from Lillooet to Cadwallader Creek by road, for instance, is prohibitory and none the less, the report made in the fall of 1914, by Mr. Wm. Brewer, M.E., of the Lillooet M. District, before the P.G.E. Railway was operating between Squamish and Lillooet, shows that there was increasing activity throughout the district and that there are many most promising groups of mines from which much may reasonably be expected when the question of transport is definitely answered.

In the Cariboo some placer mining is done, several hundred thousand dollars' worth of gold being recovered even under existing conditions. The Gold Commissioner for the Cariboo Mining District, gives some interesting data respecting the price of staples: Flour 12c., beans 15c., bacon 40c., tea 75c., butter 60c., cheese 35c., beef 30c., sugar 15c.—all per pound; gum boots \$13 per pair, and this before the war. Freight from Ashcroft to Barkerville, over excellent roads, is 7½c. per pound, the same as it was in 1875, from Yale by the old-time roads and trails! From this it would appear that some opening for enterprise exists even now. The P.G.E. Railway, passing through Quesnel, shortens the distance to Barkerville by nearly two-thirds, and will undoubtedly serve to revive placer mining there, and all along the Upper Basin of the Fraser.

The railroad at present operates between North Vancouver and Whytecliffe on Howe Sound, a distance of a dozen miles, a useful suburban service. Construction of the balance of the road to Squamish lying along the eastern shores of the Sound has been deferred owing to lack of funds. When this short but expensive link is forged the great Britannia mines will be brought within two hours' run of the city. At present an excellent line of boats plies between Vancouver and Squamish, over some thirty-five

miles of quiet, almost inland waters. The trains meet the boats and run to Lillooet through a most interesting country already dotted with settlements.

The time is ripe for the merchant and the manufacturer to make a preliminary tour of the finest and most important country tributary to Vancouver. With the return of peace and the completion of the P.G.E. Railway a rapid settlement is assured. The villages and small towns will quickly expand in size and number, and the man early on the ground will reap the advantage.

PREFERS WOMEN WORKERS

Women are not, by sex limitations, disqualified from operating machinery. This is the conclusion reached by William Ohmer, a Dayton, O., manufacturer, who employs 4,000 women in a munitions factory.

Mr. Ohmer goes further and affirms that women can handle industrial machinery even better than the sterner sex. He began a year ago substituting women for men in many branches of work, and has been astonished to find what they are capable of doing. He pays them men's wages, and thus has been able to get women of intelligence. And the fact that large numbers of them "never before did a lick of work in their lives" doesn't seem to prevent their beating experienced workmen at their own game.

A training school is maintained for novices. At first the instruction was given by men; now it is given by women. And new girls seem to pick up the necessary mechanical knowledge and skill with surprising rapidity. The newcomer usually learns her job in three or four days, though it takes men far longer. In three weeks, says Mr. Ohmer, the average woman becomes as expert in the use of machinery as the man working at the job for three years.



A Homestead at Horse Lake

REDUCING THE HIGH COST OF COMMERCIAL TRAVELLERS

How the Utilization of Color Printing Saves the Cost of Providing Samples

By JOHN C. KIRKWOOD

IN Canada, Great Britain and the United States the employment of the catalogue and the colored illustrations for the selling of goods is making steady headway. This applies not alone to retail selling but also to the selling of manufacturers and jobbers.

The great mail-order houses like the T. Eaton Company, and the Robert Simpson Company in Canada, and Sears, Roebuck & Company in Chicago, know full well the value and sufficiency of illustrations to make sales, and so their huge catalogues are rich in pictures, many of them in the three-color process. As showing the increased selling power of color in illustrations, the history of Sears, Roebuck & Co., in respect to a single department, is persuasive in the extreme. It is said that when the shoe catalogue of this firm was printed in a single color the annual sales totalled \$1,250,000; but when color illustrations were used, the yearly sales immediately jumped to \$4,000,000.

Catalogues the Only Method.

From the very nature of their merchandise many manufacturers are required to sell from catalogues rather than from samples,—the makers of machinery, motor cars, pianos and many other things quite too bulky to be cheaply or conveniently transported from city to city and town to town. Similarly the makers of silverware have long been accustomed to sell from illustrated catalogues; and so also have the manufacturers and jobbers of hardware.

Yet in the light and knowledge of these successes there are still many firms who continue to send out their representatives laden down with heavy grips and trunks, and frequently with bulky and weighty special cases specially constructed to carry the firm's samples. The transportation of these by the railroads as excess baggage costs every year painfully heavy sums, and to these railway charges must be added local delivery charges from and to the railway station. Even here the expense item in connection with heavy and many trunks or cases does not end. A sample room has to be engaged, the samples have to be unpacked and repacked. Sometimes a special packer has to be carried along; and many days are lost in the course of a year as a consequence of the time consumed in the carriage by rail, cartage delays, packing and unpacking. Still the sad tale of costliness is not done; frequently the traveller must wait for trunks to arrive—trunks that have been miscarried or that were not put on the train with him; must wait his turn for a sample room; must wait the convenience of the buyer whom he wishes to view his samples; and finally must often wait hours for an outgoing train.

Others Could Do the Same.

Now it ought to be manifest that if the retail mail-order firms can sell with complete success by the printed word and the illustration, colored or otherwise; and if makers of machinery, carriages, motor cars, pianos and agricultural machinery can sell by catalogue; if jewellers and silver-smiths like Birks, Mappin & Webb, and Ryrie's; if the retail furriers, and the wholesale hardware dealers, and the makers of refrigerators and paint and furniture can sell successfully by means of catalogues well illustrated—it ought

to be manifest that others not now using catalogues can use them with equal success and obvious economy; wholesale dry goods firms, makers of millinery, brushes, footwear, pickles and preserves, biscuits, window shades, linoleums, carpets and rugs, neckwear and apparel, umbrellas, canned fish, meats and vegetables, glassware and china, curtains and fabrics, wall papers, gloves, electrical fixtures, and so on without end.

The pleasing thing is that many firms selling merchandise, which aforesaid was carried to the buyer at heavy cost, are making extensive use of catalogues and colored reproductions of their goods—this in lieu of samples. One has definite and visible evidence of this in the technical publications devoted to the business of printing and engraving. If one takes up any issue of *The Printing Art*, *The Inland Printer*, *The American Printer*, or *The British Printer*, one is likely to find in it specimen pages from actual catalogues, in full color or executed in a single color, and done with all the skill and art that engraver and printer can contribute. One may see, for example, color reproductions of fabrics, fancy bricks, leather novelties, lead pencils, baskets—to name nothing more. These several lines are shown with the utmost fidelity as to color and are quite as satisfying to the average buyer as would be the actual goods as a basis for a proper understanding of the goods and as a guide to selection.

The great obstacles in the way of a more general use of the catalogue with first-class illustrations, preferably in full color, in lieu of samples, are the novelty of the idea, and the costliness of producing a catalogue.

Novelty of the Thing.

The novelty of the idea is really the larger obstacle of the two, this since the other obstacle, namely, the cost factor, may disappear on investigation. Not only does the manufacturer or wholesaler require to be converted to the new idea, but also his road representatives. Perhaps they are the hardest to convince, and for this reason their resistance is likely to be most pronounced and longest continued. Salesmen as a class are timid of anything and everything that may seem to menace their success or rob them of full credit for successes achieved; and the radical and revolutionary suggestion that they sell from catalogues and illustrations instead of from actual samples, would certainly be protested against—at the beginning. This being so, it may be wisest for a firm wishing to introduce the illustrated catalogue as a samples-substitute to *grow* into this method rather than *go* into it suddenly and completely. And in this connection the attitude of the retail buyer must be considered; he also may not take kindly, at the beginning, to the new idea and method.

Regarding the second great obstacle, namely, the costliness of producing a good catalogue, well illustrated, preferably in full color, education is necessary here, and a demonstration. Looked at by itself, the cost of a good catalogue may be fearsome; but this is not the right way to regard the matter. As against the cost of a good catalogue must be placed the costs of man-time lost when samples have to be carried, of carriage charges, of sample rooms and all the other costs referred to earlier in this argument for a cheaper way

of selling goods. When these costs are aggregated and multiplied by the number of men a firm has out selling, it may be found that they exceed by much the cost of a catalogue and of color illustrations. Certainly until these two costs are matched one against another, no firm is in a position to declare that the cost of a catalogue and color illustrations is prohibitive. Also, there is this to be remembered, namely: very probably the cost of an annual catalogue will be greatly decreased each successive year by reason of the ability to re-use a goodly portion of the first catalogue; and in such case the comparative costs of the samples method of selling and of the catalogue method of selling over a term of years ought to be reckoned.

The Question of Cost.

On this question of the cost of catalogues and illustrations in color the answer of a manufacturer using successfully the printed aid, to the query: "Don't you find your catalogue and those three-color illustrations rather expensive?" is worth giving:—

"My dear sir, we have fifty salesmen on the road. Six or seven sell more goods than any of the rest. They demand and earn more salary than any of the less productive salesmen. And we're 'tickled to death' to pay them higher salaries, and almost afraid our competitors will grab them at still higher wages.

"Now, color printing is like the high-priced salesmen—it costs more than the plainer printing, but it's *worth more because it sells more*. We need both kinds in our business—the seemingly expensive color stuff, and the cheaper, plain stuff. But we're scanning the horizon for chances to use *more color printing*. We're not in business to *save money*, we're here to *make it*, and if color printing will get *bigger results*—as it does—we're almighty glad to pay it a bigger salary, on the same principle that a crackerjack salesman at a big salary is cheaper to this firm than an ordinary salesman at a low salary."

Let it be said that this plea for a larger use of catalogues and color illustrations as a means for reducing the high cost of commercial travellers is not an argument for dispensing with the flesh-and-blood salesman. He continues to be necessary. The argument is that he be provided with a good and sufficient catalogue in lieu of many and heavy samples with all that such samples involve in the way of costs and delays; and that with his pictorial samples and the printed word accompanying them he accomplish his business. It can be done, for it is being done every day, and being done more and more in Canada, Great Britain and the United States as the men at the head of things investigate the potency and sufficiency of printed matter plus a good salesman to make maximum sales.

WHAT LOCAL MERCHANTS MAY DO.

Arguments Advanced by an Amherst Business Man for the Support of Canadian Industry.

Commendable work is being done by men like C. L. Martin, managing director, Martin's Limited, Amherst, Nova Scotia, in urging upon the people of his community the importance of supporting Canadian industry. In a recent issue of a local paper, he has a contribution addressed to the women of Amherst, telling them how they can help to advance the country's prosperity by buying "Made in Canada" goods. His article is so much to the point and illustrates so well how merchants here and there throughout the Dominion could, if they wished, advance a movement of very great importance, that we feel impelled to reproduce it in whole:—

"There is to be a great Convention held this fall representing the various industrial activities of our Dominion, including manufacturing, mining, farming, lumbering, fishing; also banking, insurance, transportation companies and business firms in order to gather the most valuable data by which to promote a larger degree of prosperity for Canada and to prepare for the reception of our returning conquerors and emigrants. This is a most excellent and timely act, for there will be the wisdom of our trade and commerce debating and passing important resolutions unnumbered, while much will remain untouched to be discussed as time will show. The Convention may pass these resolutions unanimously and provide capital for new industries, send selling agents and representatives to other countries as well as many other similar good business deeds, but the efforts will not be attended by the crowning success we may hope for until our Canadian women, who do nine-tenths of the buying, properly arouse themselves and firmly determine to buy 'Made-in-Canada' goods, and that is Canada's greatest power, greater than the Bay of Fundy tides, Niagara Falls and all the other powers combined.

"When the ladies find Canadian products inferior to those of other countries or when they believe they can be improved, do not only speak of it to your merchant, but write direct to the maker stating your frank opinion and send them your remedial suggestions; also *demand* that they, too, give the preference to Canadian labor, raw material, Canadian insurance, coal, etc., and where possible they print it on their containers. Do not thoughtlessly condemn our goods and praise foreign standard goods when you can and should assist to better our own. Some of our producers are practically new in many lines and are as honest as those in other countries, therefore would welcome your ideas.

"Make our patriotism run deeper than our vanity. It is not only noble and right but will prove highly beneficial to our own—that means you. Those outside of Canada who are anxious to sell us will quickly discover that if they wish to secure the Canadian market they must establish their plants in Canada, thereby giving more labor to Canadians, which added to our present and growing concerns will be adding prosperity to prosperity and furnish the strongest testimony in favor of our productions which will enable us to ship more largely to other countries, thus bring in more new capital whereby we will be in a far better position to supply ourselves and protect ourselves against whatever may happen, otherwise we will be unprepared and dependent too much on a possible enemy.

"It is now when the men are actively engaged in war operations and the different callings so sparingly manned, that the women can take up this most effective movement with so little or no cost and yet solving the greatest problem of our country financially, meanwhile burning loyalty into the hearts of our people and patriotism to our glorious Empire as the women of old England are doing by working daily in munition factories, the fields, the mines, the tram cars and many ways.

"This work is as necessary for our growth and protection as the Red Cross work is in aiding the war. Why not begin right now in Amherst and organize a 'CANADA FIRST' society or any name you wish to call it? It will come. It must come. Why not start from Amherst? Think of the wonderful effect of such organized effort and co-operation from Halifax to Vancouver. You ladies are the buyers, you decide the class of goods to be sold, and upon you, and you chiefly, depends Canada's growth and prosperity. Shall it be a failure or a marvellous and unequalled success? Give Canada your answer, PLEASE. She is anxiously waiting."

One more attempt is being made to get a pulp and paper industry started in Manitoba. The newest incorporation in this connection is that of Prairie Pulp & Paper Co., Limited, of Winnipeg, with a capital of \$200,000.

A well-known industrial chemist, whose name the company bears, is closely associated with the incorporation of the Vander Linde Rubber Co., Limited, of Toronto. We understand that this company will use its \$350,000 capital to develop a number of lines in the latter industry not heretofore made in Canada, as well as carrying on a regular line of rubber and moulded goods.



THE NEW PALACE STATION, QUEBEC

GOVERNMENT OWNERSHIP OF RAILWAYS

Resume of Two Important Articles on the Subject by Canadian and American Authorities

IN its issues of October 6th and 13th, the *Railway Age Gazette* publishes two exceedingly interesting articles on the Intercolonial Railway of Canada. It will be recalled that Samuel O. Dunn, editor of the *Railway Age Gazette*, contributed to the *Journal of Political Economy* for July an article, subsequently reprinted in *INDUSTRIAL CANADA*, which dealt in a most exhaustive manner with the management and finances of Canada's great government-owned railway. This article attracted considerable attention and formed the occasion for many arguments both for and against government ownership of railways.

In the *Railway Age Gazette* for October 6th, J. L. Payne, Comptroller of Statistics, Department of Railways and Canals, Ottawa, took issue with Mr. Dunn regarding certain of his conclusions. Mr. Payne made it plain at the outset that he was not approaching the subject as a partisan or an apologist for state ownership. "My purpose," he pointed out, "is three-fold; first, to present the true story of the Intercolonial Railway; second, to show that the experience of the Intercolonial cannot properly be taken as demonstrating either the success or the failure of government ownership; and, third, to correct some of Mr. Dunn's assumptions and deductions which were manifestly based upon imperfect or misleading information."

Mr. Payne's first point was to emphasize the fact that the Intercolonial was built and is operated by the Government of Canada, not to demonstrate the soundness of state ownership, but to carry out an essential part of the bargain of Confederation.

"All arguments respecting the Intercolonial which ignore the historical reason for its existence are certain to lead to erroneous conclusions. The road was not built as a Government project because it was believed that form of ownership was preferable to corporate control. It was built solely to secure and maintain Confederation. It has accomplished that

purpose, and it stands to-day as the absolute seal of a solemn compact entered into at the birth of the Dominion. No corporation wanted to build it. The undertaking had to be carried out by government. Moreover, no existing corporation would to-day take over the road and operate it on the terms which were tacitly, if not explicitly, made a part of the primary conditions of union."

Again, Mr. Payne, in dealing with the location of the Intercolonial, points out that Mr. Dunn did not get at the root of the matter. The Government of Canada did not have a free hand in the matter, as Mr. Dunn assumed. It was the Imperial Government which insisted on the construction of the line as far from the American boundary as possible, thereby producing a needlessly long and roundabout course. "If Mr. Dunn had given full value to the real reason for the seemingly absurd location of that part of the government railway, I am confident he would not have based any deductions whatever upon the fact itself," concludes Mr. Payne.

Coming to the financial side of the argument, Mr. Payne lays down the striking conclusion that the Intercolonial has not paid, in the commercial sense, simply and solely because its freight and passenger rates have been too low. To demonstrate this, he begins by claiming that Mr. Dunn's comparison of the operating results of the Intercolonial with those of the eastern lines of the Canadian Pacific are unfair. There are no official figures respecting the eastern lines of the C.P.R., and any data which Mr. Dunn used must have been obtained from private sources and be based accordingly on arbitrary calculations. He proposed, therefore, to compare the Canadian Pacific as a whole with the Intercolonial as a whole.

"For the purpose of the comparison I propose to make I have selected for the Canadian Pacific the statistical year ended June 30, 1913. This was the year before the war, and

prior to the coming in of abnormal conditions. It was very much the best year in the history of the system. For the Intercolonial I have taken the regular fiscal year, ended March 31, 1913, which happened to yield an exact balance as between earnings and operating cost. I have done this for the sole reason that I want my figures to agree with those which are annually laid before Parliament by the responsible head of the Government railway system.

"In 1913 the Canadian Pacific had passenger earnings amounting to \$34,995,156, based on a rate per passenger per mile of 1.983 cents. The Intercolonial from the same source earned \$3,438,447 on a rate of 1.617 cents. The Canadian Pacific rate was 22.6 per cent. higher than the Intercolonial rate, and the Intercolonial was 27.3 per cent. lower than the Canadian Pacific rate. It, therefore, follows that if the Intercolonial had enjoyed the Canadian Pacific rate, it would have earned \$777,089 more, whereas, if the Canadian Pacific had been limited to the Intercolonial rate, it would have earned \$6,474,104 less. From freight service the Canadian Pacific received \$88,101,523 on a ton mile rate of .784. The Intercolonial receipts were \$8,028,760 on a .570 rate. The Canadian Pacific rate was 37.5 per cent. higher than the Intercolonial rate, and the Intercolonial was 27.3 per cent. lower than the Canadian Pacific rate. This means that if the two roads had exchanged freight rates, one would have earned \$24,051,716 less and the other \$3,010,784 more. Carried a step further, this exchange would have reduced the net earnings of the Canadian Pacific from \$43,049,764 to \$12,523,944, a difference of \$30,525,820, while it would have given the Intercolonial a surplus of \$3,787,873. The former line would have had barely enough to meet fixed charges and not a penny for dividends. The Canadian Pacific would have had net earnings of \$969 per mile of line operated, while the Intercolonial would have had \$2,540."

Reasons advanced by Mr. Payne for not raising the rates on the Intercolonial are, first, the attitude of the people of the Maritime Provinces, who believe it a part of the Confederation agreement that the rates should never produce more than operating expenses; second, the water competition for seven months of the year; and third, the fact that the canals of Upper Canada are free.

Mr. Payne further takes issue with Mr. Dunn in the latter's contentions that the Intercolonial suffers from the interference of politicians; that it was over-officered in the higher ranks; that its station buildings are too palatial; that its road-bed is poor and its rolling-stock inferior. To all of these assertions he makes a qualified denial.

Mr. Dunn's reply to Mr. Payne, in the October 13th issue of the *Railway Age Gazette*, goes very thoroughly into each and everyone of the latter's arguments.

So far as the contentions that the Intercolonial was built as a political necessity, and that its long route was due to the desire to have it run as far from the United States border as possible, are concerned, Mr. Dunn says simply: "The political conditions which existed at the time of the creation of the Confederation, and the relations prevailing between the United States and Canada, long ago underwent radical

changes. Is it not therefore fair to suggest that the Government should long ago have changed the route and modified the management to meet the changed conditions? It would have been feasible years ago to have shortened the lines, as the enterprising managements of private railways in the United States, in Canada, and in other countries have done."

After vindicating the reliability of his calculations respecting earnings of Eastern Lines of the Canadian Pacific, which Mr. Payne doubted, the writer agreed to meet his opponent on the same ground and compare the C.P.R. as a whole with the Intercolonial as a whole. However, he would go further and make an eight-year comparison, rather than a single year. Taking the Canadian Pacific's average freight and passenger rates for each of the last eight fiscal years for which complete figures are available, and applying them to the Intercolonial's business, Mr. Dunn found that the rate of return on the cost of the road, with the C.P.R. rates, would average 2.78 per cent.

"Even if the Intercolonial had had the average rates of the Canadian Pacific system, it would have failed in every year, and in most years by a wide margin, to have earned four per cent. on its cost. How much could the Intercolonial have earned on the average freight and passenger rates received by the Canadian Pacific eastern lines? I have the average freight and passenger rates for the eastern lines only for the years 1914 and 1915. In the former, the Intercolonial on these rates would have earned only 1½ per cent., and in the latter only 1.1 per cent. The foregoing statis-



RAILWAY YARDS AT PARENT, QUEBEC

An express train of the Canadian Government Railway System is seen leaving for the East

tics sustain rather than refute my contention that the enormous losses of the Intercolonial have been due more to the way it has been managed than to the lowness of its rates."

Mr. Payne makes a comparison between the Intercolonial and the Pere Marquette, the latter a road now in the hands of receivers. His conclusion is that the Pere Marquette statistics for the fiscal year it became bankrupt indicate better management in every respect than do the figures of the Intercolonial for the same year.

Taking up the statistics of earnings and expenses of the Intercolonial in the year ended March 31, 1916, Mr. Dunn finds a great improvement. The increase in gross earnings and the reduction in operating expenses converted a deficit of almost \$300,000 in the year ended on June 30, 1914, into net earnings of \$2,027,296 in the year ended March 31, 1916.

"It may be said," argues Mr. Dunn, "that these figures show that railways can be economically managed under government ownership. I have never denied this. I have always contended that the important question is not what can be done, but what probably will be done. The fact that for fifty years the Intercolonial failed, on the whole, to earn its operating expenses, and that then within two years an operating deficit of \$300,000 was changed to net earnings exceeding \$2,000,000, shows, if it shows anything, that it is about a 'fifty-to-one' shot that a government railway will not be efficiently operated."



SECURING THE SAMPLE

Quantities of wheat are taken from various parts of the car by means of a long brass probe, and are mixed together on the sheet shown in the illustration.



COLLECTING SAMPLE BAGS

After a car has been sampled, the door is closed and re-sealed, and the sample bag is hung on a convenient nail, later to be gathered up and sent to the inspection office.

HOW CANADA'S WHEAT IS GRADED

Explanation of One of the Most Important Processes in the Country's Business Life

By W. J. POWER

THE actual governmental inspection of grain to determine the grade is an exceedingly interesting, and one might almost say a picturesque, process. Take, for instance, the work at Winnipeg, which, on account of the immense volume of grain that passes through its terminals, is the most important of all.

First of all, there is the sampling. It is easy to see that on the securing of a satisfactory sample from a given car much will depend. It is not enough to take a handful of grain at haphazard. There must be a thorough examination of every part of the load. To accomplish this, and to prevent a shipper from imposing on the inspector, great pains are taken.

The samplers go out in gangs, working in eight-hour shifts, for trains pull into the yards at all hours of the day and night. The car opener leads off. He opens the doors all along one side of the train, and, as he passes, hangs an empty sample bag to a convenient hook. Next comes a sampler carrying a little ladder and a long probe. He hastily climbs up on top of the grain, which, of course, can only be loaded to a certain specified height in the car, and, spreading a clean cloth near the door, proceeds to dig up samples here and there through the mass of grain. With his probe he is able to procure a quantity of the wheat from almost any corner of the car he may desire. These samples are piled on the cloth, ready for the track foreman.

The latter official mounts the ladder and, leaning in, mixes the grain on the cloth together and fills the sample bag with it. He writes on a ticket the number of the car, the date, the load line, the initials of the sampler and any other particulars he deems necessary, and puts it in the bag, which is hung on the car until it is collected by the car sealer, who follows the samplers, closing and sealing the doors. In this way the average train of forty-five cars is handled inside an hour.

The samples are forwarded to the inspection office in the city, where they are placed in order according to the number on the inspection sheets, which have already been made out by the car office clerk. The inspection then begins. As good light is essential and daylight is necessary for proper grading, the work starts at 9 a.m., and is continued for about

six hours only. The inspectors sit in a row at windows facing the north, as the light from this direction is preferable. They are all men specially qualified for the task, for they have to pass stringent examinations before they can receive employment. Usually they have begun as samplers, track foremen or weighmen.

Inspection turns mainly on three points: the quality of the grain, its condition and the admixtures. The quality depends on soundness, color, weight and the percentage of hard wheat. The condition is dependent on moisture content (which in doubtful cases is tested mechanically), heat, etc. The admixtures are tested by a process of sieving and weighing, called setting the dockage. In this process either the cleaned grain or the resulting screenings can be weighed. After the grading is completed, the samples are put into tins with the sample tickets and are placed away on shelves for future reference should there be any appeal against the inspector's decision.

The inspector enters up his finding on the sheet provided for the purpose, which then goes back to the clerical department, where a certificate of grade is issued. On this certificate the grain is stored in the terminal elevator. The movement of the wheat is much facilitated by this means, for there is no delay in unloading a car into the bin provided for its particular grade. Furthermore, the grain is sold according to the grade certificate, a method peculiar to Western Canada.

There may be dissatisfaction with the decisions of the Winnipeg inspectors. If so, owners of the grain under dispute may call for a reinspection. The sample is brought down again and re-examined free of charge. If the parties interested are still dissatisfied they can have recourse to the Survey Board. This board corresponds to the Supreme Court in matters of law, for its decision is final and irrevocable. There are four of these tribunals in Canada, sitting in Calgary, Winnipeg, Toronto and Montreal, each having jurisdiction over an inspection division. The members are appointed by the Board of Grain Commissioners on the recommendation of local Boards of Trade and Ministers of Agriculture.

From Winnipeg there is sent every night by express to Fort William a sheet showing the numbers of the cars in-

spected, the grade and dockage of their contents and other necessary particulars. Grade tickets are made out for each car on the list and these are tacked to the cars on arrival. This shows the trainmen where each car has to be shunted, and ensures their rapid unloading at the terminal elevators. A careful record is kept of the contents, condition and movement of the cars, so that there may be kept on file complete particulars of all the grain handled.

There is a second inspection to which the grain is subjected by the Government authorities, and that is when it is being loaded on the lake freighters. This inspection is somewhat more difficult of accomplishment in view of the fact that it has to be made while the grain is on the move from elevator to ship. It is carried out at three points, the first as the grain is being conveyed from the storage bins to the working house, the second on the floor of the working house, and the third as it pours from shipping bin to hold. If an inspector at any of these points finds that the grain is running under grade, he immediately orders loading operations to cease until the defect is remedied. In the matter of weighing the grain, which, next to grading, is the most important transaction in the business, there cannot be the same safeguards. The weighing is done wherever there is an elevator. The grading is carried on at only a few central points. An immense and unbearable expense would be imposed were there to be a Government weighmaster at every one of the 2,500 country elevators in the West. To safeguard the man who sells and protect him

as far as possible from false weights, the only recourse is to have occasional inspection of scales by officers of the Inland Revenue Department. This, and imposing heavy penalties on those who wilfully falsify or misstate weights, are about the only means to prevent fraud.

At the terminal elevators, however, the State does take a hand in this feature of the business. A weighing department, under the jurisdiction of the Board of Railway Commissioners, has been established at Fort William. Here a Government weighmaster not only inspects the scales in the terminal elevators, but supervises the weighing operations. The latter are carried out by a weighman in the employ of the terminal elevator company. He makes out a draft ticket showing the amount weighed as punched by the scale register, and from this ticket the particulars are taken for the certificate of weight.

There are numerous other safeguards which have been erected round the operation of grain handling. For instance, no one can conduct an elevator business without taking out a license and filing a bond. An elevator company must deal with the farmers in a certain carefully prescribed way. The grain itself must be received, cleaned, stored and shipped

according to well-defined regulations. Even track buyers and commission men must govern their actions under the most strict control. In a word, there is very little room left for human vagaries, the whole transaction being systematized and regulated to a most extraordinary degree.

AUSTRALIAN TAX ON OVERSEA FIRMS.

Under the amended Income Tax Assessment Act of Australia an absentee principal is taxable on an income equivalent to 5 per cent. of the price which the goods are sold. The imposition of the tax makes the Australian agent responsible for the tax assessed against his principal. As some correspondence has been received from Canada on the subject, the action taken in Australia to endeavor to remove the tax is of interest to Canadian manufacturers represented in the Commonwealth. The effect of this taxation on incomes

of foreign principal doing business in Australia, through the medium of agents, was emphasized by a large deputation of representatives of British (and some Canadian) manufacturers who recently interviewed the Commonwealth treasurer. It was stated there was a tendency on the part of principals to dispense with the services of agents in Australia, especially where the basis of profit laid down in the Act is above the margin possible to obtain. Whether the tax is avoided by default or circumvention, the resident agents will be in the position of innocent sufferers. As an alternative from the pre-



CORNER OF THE SAMPLING OFFICE

This is the place where well-trained experts decide what is the grade of each and every car of grain that passes through the Winnipeg terminals

sent system, the deputation requested that a special surtax be imposed upon all imports. The treasurer appeared to be impressed with the manner in which the protest was presented, and stated that the representations made would be carefully considered by the Government.

EMBARGO ON SOAP.

To increase the local output of glycerine in connection with the domestic manufacture of soap, Australia prohibited all importations of soap except from the United Kingdom. In this connection the *Board of Trade Journal*, published in London, England, Sept. 21st, 1916, states that a cablegram has been received from the Commonwealth Government notifying that the importation of soap manufactured in Allied countries may also be permitted. In this connection a recent report of Mr. D. H. Ross, Canadian Trade Commissioner, Melbourne, points out that the Australian market has not been exploited to any extent by Canadian manufacturers, although United States manufacturers of soap were rapidly increasing their trade up to the time of the application of the recent embargo on imports.



Elaborate arm and hand for mechanic



The last word in artificial members



Steel bar arm for laborer

NEW LIMBS FOR WAR VICTIMS

Ingenious Devices enable the Maimed to resume their Places in the Industrial Life of the Country

By JACQUES BOYER

(Article and Illustrations by Courtesy of "Scientific American")

THE artificial arms now being produced for the benefit of those mutilated in the war are no longer merely designed to mask the loss of a member. They are ingenious mechanisms, based on sound physiological considerations, devised with cunning and put together with art. With their aid these "glorious cripples," as the French call them, are able either to resume their previous occupations, or to exercise a new profession demanding somewhat less manual dexterity, or at least, in the most desperate cases, to execute without distress the movements essential for daily existence.

For those *amputés* who have preserved the elbow joint, an American firm constructs an artificial arm with which are possible a large variety of movements. Flexions of the wrist, opening and rotation of the "hand," placing the "fingers" in certain positions and holding them firmly there, are all accomplished with no intervention of the other hand aside from engaging and disengaging of a catch. A German firm has perfected a system attached rigidly to the shoulder whereby movements based upon the humerus, collar-bone, or shoulder-blade are transmitted to the stump of the forearm. The hook terminating this artificial arm can be subjected to heavy loads without in the least straining the enfeebled muscles of the wounded man.

More recently, organized effort has been made by the French authorities to place the entire technique of artificial limb

supply upon a standardized scientific basis. At the laboratory of military prosthesis, established in Paris, careful determinations are made of the muscular and nervous conditions in and around the damaged limb. In accordance with these observations, individual prescriptions are made and carried out with a degree of skill which could not by any possibility be approached in times of peace, with the negligible number of cases which then arises.

The ordinary type of arm supplied to laborers and mechanics consists of a thin steel bar terminating in a sort of crab-foot attachment. The base of this is a steel cup with leather backing. The latter is either hard and molded to the stump-end, or soft and laced about it, according to the length and shape of the stump. The steel and leather cup is firmly strapped to the shoulder in such a way as to be governed by a band passing about the chest and under the opposite armpit. There is at the point where the steel bar enters this cup a most ingenious joint combining the ball and socket

and the screw principles, while in addition the bar carries an ordinary hinge joint. Both these joints are supplied with stops which can be set either to hold them rigid in any desired position or to leave them free to operate, checking them at a given point. These must be set by the other (natural) hand. There is no independent motion of the crab-foot hand; it is merely set by the natural hand to grip



"Amputes," but cheerful workers

the tool, which is released in the same way when the operation is completed. The motive power is of course supplied by the muscles of the upper arm, the shoulder and the chest; or in extreme cases by swaying of the body. It is most extraordinary how skillful the *amputés* become in the manipulation of this arm. It is interesting to note, also, that when he has finished his day's task, the workman unscrews his working hand and replaces it with a more elegant "hand of parade" for public exhibition on the streets.

For the clerical or professional worker and the skilled artisan there is made a much more elaborate hand. It is of nicked copper, with separate fingers, and even simulated finger nails. The metal shell of the palm is made in two pieces, front and back, leaving, when fitted together, holes from which project the fingers. Each of these is in one piece and, therefore, rigid, but gracefully curved. Each is hinged onto a common axis inside the shell of the palm, and held in closed position by a spring. Levers of steel passing over a cog-wheel control these hinges, and at this cog-wheel terminates a flexible steel cable passing in a leather tube under the arms and about the chest. These features are all shown in the excellent cut below in the centre.

The motive power for the operations of this hand is furnished by expansions and contractions of the chest, which affect the flexible cable. The mechanical arrangements of the hand are such that the fingers imitate in their workings the motions of those of a natural hand; the proprietor does not have to concern himself with the details at all. He merely generates the power and the machinery does the rest. He is able to grasp all manner of objects, either in the hand or between two fingers; even the handling of a match or a pin is not at all beyond him.

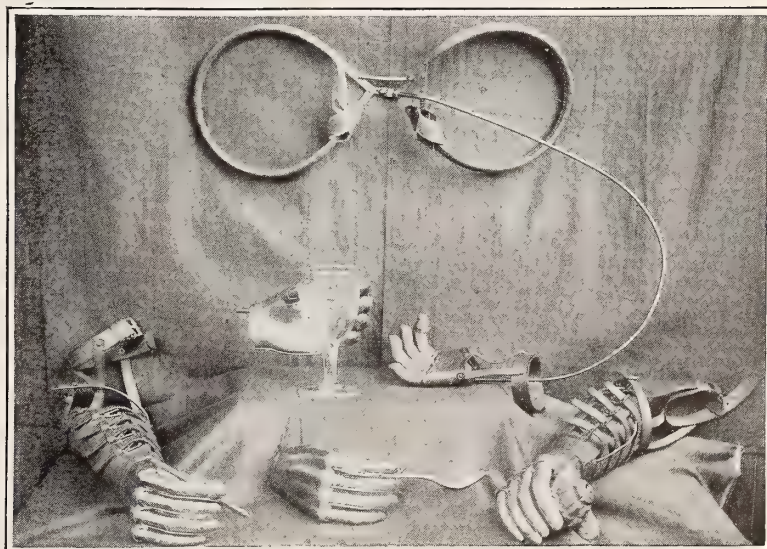
We present several photographs showing these hands in use,



Five artificial hands in this merry gathering



Armed with crab-foot hand for mechanic



The mechanism of the elaborate "hand" for clerical and professional workers

which are by all odds the most striking of their sort that we have seen.

FOREST PROTECTION.

What Can be Accomplished when Necessary Legislation is Provided.

The extent to which preventive measures can be made effective in forest fire protection is indicated by the experience this season of the

St. Maurice Forest Protective Association. This is an association of limit-holders, representing some 12,000 square miles of forest land on the St. Maurice River watershed, Quebec. In previous years, much loss has resulted from fires due to the carelessness of settlers in clearing land, and of river-drivers and others who had occasion to build camp fires in the woods. A vigorous campaign of education has almost eliminated these sources of fire damage within association territory. This result could not, however, have been accomplished in the case of settlers' fires, without a strict enforcement of the law which prohibits settlers from setting out clearing fires during the summer season, except on permit issued by a forest ranger. The enforcement of this provision, in combination with the vigorous campaign of education, has been so effective that the manager of the association, Mr. Henry Sorgius, reports that, this season, only one fire

within association territory has been set by human agency, all the other fires reported having been caused by lightning.

In view of this admirable record in an important section of Quebec, it is evident that the Province of Ontario must consider very seriously the adoption of the permit system, if a repetition of the clay belt disaster of 1916 is to be avoided, and if prospective settlers are to be assured that life and property will be sufficiently safeguarded to justify them in making their homes in the north country.—C. L. in Conservation.



T A R I F F



By J. R. K. BRISTOL

TO MANUFACTURERS WHO CONTEMPLATE ENGAGING IN EXPORT BUSINESS

Are you aware that you have the privilege of practically duty free materials for manufacturing for export? Full information on this matter can be obtained from the Customs Department, Ottawa; or from the Manager, The Tariff Department, Canadian Manufacturers Association, Toronto

OF ADVANTAGE TO CANADA.

France's Prohibition of Imports Amended to Favor British Products.

Licenses are now attainable for importation into France and Algeria from Canada of goods the import of which into those countries is prohibited.

The procedure outlined in the "Board of Trade" announcement of September 2nd, 1916 (see *Board of Trade Journal*, 7th September, 1916, pages 707-8), applies to the export from Canada to France of goods which are on the French list of prohibited imports.

According to this announcement a Canadian exporter:—

- (1) Sends his application for a license to the Board of Trade, Gwdyr House, Whitehall, London, S.W.
- (2) The Board of Trade "viser" the same and forward to the French Office in London.
- (3) If application is approved the French Office issue an import license, forwarding the original to actual consignee in France, and copy to the exporter.

The application, before being forwarded to the Board of Trade, must be attested on behalf of the exporter, as to the origin of the goods. The authority which should make such attestation will be announced probably in the next issue of INDUSTRIAL CANADA.

A list of the articles covered by the French (and Algerian) prohibitions of import, in respect of which import licenses will be issued (for British goods) by the French customs office in London, is printed below for convenience of reference:—

No. in French Customs Tariff.	Articles.
18 ter	Truffled poultry.
19 ter	Pates de foie in tins, jars, or pastry.
ex 26	Ornamental feathers, prepared or mounted.
ex 48	Fresh oysters, other than oyster spat, and marinated oysters.
49	Lobsters and crayfish, fresh, preserved or prepared.
	Fresh table fruits, viz:—
	Forced grapes and fruits.
	Other than those specified by name in No. 84 of the French tariff*, imported during periods other than the period of production in France.
ex 85	Pistachio-nuts.
ex 86	Candied or preserved table fruits, other than gherkins, cucumbers, picholines and capers.
ex 170	Nursery and hothouse plants and shrubs:—
	Aroideous, amaryllideous, araliaceous, aspidistra, azalea, indica, begonia, bromeliaceous, camellia, cycadaceous, cyclamens, crotons, dracaena, hothouse ferns, selaginellaceous, maranta, ophiopogon, orchidaceous, palms, pandanaceous, phormium.

* I.e., other than lemons, oranges, cedrats, etc., mandarin oranges and "chinois," bananas, carob-beans, wine grapes and grape residue, must, apples and pears, figs and almonds.

No. in French
Customs Tariff.

Articles.

174 quater	Mineral waters.
ex 175	Marble (statuary or other), sculptured, polished, shaped (turned, etc.), or otherwise worked.
ex 175 bis	Alabaster, sculptured or otherwise worked.
175 ter	†Cut gems, including so-called scientific stones, in the rough or cut.
ex 176	Agate and other similar stones, worked.
ex 176 bis	Rock crystal, worked.
ex 177	Stone, sculptured, shaped (turned, etc.), or polished, other than lithographic stones.
177 bis	Staff and plaster moulding.
177 ter	Ball (chiques) of stone.
311	Perfumery (soap and other.)
337	Pottery of common clay, glazed or enamelled, not including bricks, tiles, and other builders' pottery.
341	Stoneware (poteries cuites en grès) of fine paste, with or without decorations, reliefs or enamels.
345-346	Fine faience and majolica.
347	Porcelain.
	Glass and crystal, viz:—
348	Plate glass and looking glass.
ex 350	Hollow glass (gobeletterie) other than articles for lighting purposes.
ex 358	Vitrifications—
	Imitation precious stones, charms (breloques), colored or not, of glass.
	Flowers and ornaments of beads and porcelain; mosaics on paper.
	Wreaths, finished or not, and other articles in vitrification or porcelain, with or without ornaments of metal.
391	Lace and guipure of tissues of linen, hemp, or ramie.
	Tissues of cotton, pure, viz:—
ex 419	Hosiery articles, other than gloves, embroidered by hand or machine or ornamented with lace or passementerie ‡including socks and stockings, openwork or "à grisote," and stockings striped lengthwise by figure-weaving (brochage).
420 bis	Hand-made lace.
	Tissues of wool, pure, viz:—
ex 442	Carpets, other than plain or printed carpets.
ex 443	All articles or hosiery other than gloves of hosiery work, embroidered by hand or machine or ornamented with lace or passementeries.
446	Hangings (tapisseries).
ex 460	Clothing and other made-up articles of silk tissue.
460 bis	
460 quin	
& 460 sex	
ex 461 bis	Paper hangings and edgings of paper hangings, velvety, metallised, stamped, glazed, imitation leather.
464 ter	Fancy articles of cardboard (cartonnages) ornamented with paintings, reliefs, stuffs, wood, plaited straw, common metals, etc.
464 quater	Lincrusta and the like.
465 ter	Articles of cardboard or cellulose, decorated by painting or with incrustations.

† The French office in London will not grant licenses for the importation of diamonds; applications for permission to import diamonds must be made by the consignee to the competent authority in France.

‡ Articles of hosiery trimmed with crochet, lace, ribbon, tape, galloons and other ornaments, are not considered as "embroidered or ornamented with lace or passementerie," provided that such additions be simple accessories increasing the value of the article by less than 15 per cent.

No. in French
Customs Tariff.

Articles.

- 469 Engravings, facsimiles of engravings, photographs, photocollographs and the like, prints, lithographs, chromos, decalcomania pictures, labels and designs of all kinds, including calendars, commercial advertisements, and interiors of albums for photographs and collections and picture post-cards.
- 469 bis Photographs other than those having an artistic or documentary character.
- 469 ter Photogravures and the like, in sheets or cut into cards, menus, etc.
- 484 Gloves of fur, skin, or leather.
- 490 Trunks of wood or pasteboard covered with leather, and trunks composed entirely of leather.
- 491 Wares of moroccoed leather (maroquinerie), supple or hard.
- 491 bis Covers for albums for collections, of leather, wood, fabric, paper, plain or decorated, and other.
- 491 ter Albums for collections.
- ex 492 Manufactures of skin or leather, natural or artificial, viz:—
Clothing of all kinds (not including boots and shoes, gloves, etc.).
Valises, hand-bags, travelling bags, cases for photographic apparatus, for sporting guns, for musical instruments, etc.
Canes, whips, riding whips, sticks, and similar articles of leather.
Body belts of worked leather.
- ex 495 Plate and other large wares (orfèvrerie) of gold, of platinum, of silver, or of silver-gilt.
- ex 496 Gilt or silvered articles—
Rolled gold or silver jewellery (doublé), on silver, on copper, on German silver, or on pinchbeck.
Plaqué (i.e., wares of common metal, covered, by rolling, with a sheet of precious metal) and wares—other than jewellery—silvered or gilt.
- 496 bis Imitation jewellery.
Articles of copper, pure or alloyed with zinc or tin, viz:—
- 573 Cloisonné enamels.
Objects of art and ornament, including imitations.
- ex 581 Old arms for collections, and arms of all descriptions for trophies.
- ex 587 Casings and parts of grenades.
- ex 591 } Furniture, carved, incrustated, with marquetry
ex 592 } work, decorated with mosaic work, orna-
ex 592 bis } mented with copper, gilt or lacquered.
- 604 Musical instruments.
- 605 Accessories for, and detached parts of, musical instruments.
- 614 Carriages not to run on rails: vehicles other than those for commercial or agricultural use or for cartage.
- ex 614 bis Velocipedes (cycles) and parts thereof.
- ex 614 ter } Automobiles—
Carriage bodies for automobiles.
Chassis carrying frames for automobiles, of stamped sheet steel.
Iron or steel rims (jantes) for automobiles.
Acetylene headlights and generators for automobiles.
- 629 Coral, mounted or cut.
- 630 Articles of real meerschaum.

§ The term maroquinerie comprises the various articles manufactured by morocco-tanners, of which the principal part consists of leather (moroccoed or not), such as portfolios, blotting pads, hand-bags, travelling bags (small or medium size), purses, albums, etc. "Hard" maroquinerie includes particularly articles in which the leather constitutes only an exterior covering stretched or fixed on a carcass of wood, cardboard, etc., and of which the value compared with the weight, is relatively less than that of articles of "supple" maroquinerie. In the latter category are included wares of which the leather constitutes the principal part, and forms, in a sense, the body of the article.

|| The French office in London will not grant licenses for the importation of those parts or accessories of automobiles of which the importation is prohibited. Applications for import licenses in respect of such parts or accessories should be made by the consignee to the competent authorities in France.

No. in French
Customs Tariff.

Articles.

- 630 bis Articles of imitation of meerschaum, of copal, of steatite, of petroid, of diolite or of asbestos.
- 630 ter Photographic apparatus, viz:—
- 635 bis Apparatus called "detective," instantaneous, double-lens, photographic apparatus, and hand apparatus of all kinds, stereoscopic or not (verascope, glyphoscope, etc.), metal shutters.
Cinematographs, projection apparatus, magic lanterns with cinematograph movements and other apparatus.
Small wares (tableterie) of ivory, mother-of-pearl, tortoise-shell, amber and amberoid, viz:—
- 638 ter Combs.
- 639 Billiard balls and countersunk beads.
- 640 Keys for musical instruments with key-boards.
- 640 bis Tobacco pipes and stems of wood, mounted in amberoid, amber, ivory, mother-of-pearl, or tortoise-shell.
- 640 ter Cigar-holders and cigarette-holders, mounted or not.
- 640 quater Other articles.
- 641 bis Small wares (tableterie) of other materials:—boxes of lacquered wood and all other articles. ¶
- 643 Fans and handscreens, mounted or unmounted.
- ex 644 Brushmakers' wares, fine.
- 646 Products of the toy trade, and fancy and bazaar goods (articles de bimbeloterie) and worked detached parts thereof.
- ex 647 bis Corsets of silk tissue, pure or mixed.
- 649 Worked human hair.
- 650 "Ouvrages de mode," (hats for women and girls, trimmed with flowers, feathers, and other military ornaments.)
- 651 Artificial plants, foliage and fruit, even affixed to other articles (except "ouvrages de mode"), branches for vases and similar decorative articles and detached parts thereof.
- 651 bis Plants and flowers, naturalized, sterilized, painted or prepared.
- ex 652 Umbrellas and parasols, of silk.
- 654 Articles for collections, not for trade purposes, other than samples, natural history specimens, and Egyptian, Greek, Roman, etc., antiquities.

SWEDEN.

War Measures Certificate of Origin and Interest has a
Changed Wording.

Referring to the statement on page 752 of INDUSTRIAL CANADA for October, 1915, to the effect that a special Certificate of Origin and Interest is required in connection with all goods imported from Norway, Sweden, Denmark, Holland and Switzerland, when actually shipped from those countries after October 10, 1916.

The wording of the Consular Certificate of Origin and Interest in respect of goods imported from Sweden has been changed.

The Certificate that will be issued by the British Consular officers in Sweden must be worded as follows:—

FORM OF CERTIFICATE OF ORIGIN AND INTEREST.

I, hereby certify that Mr. (producer, manufacturer, merchant, trader, etc.), residing at in this town, has declared before me that the merchandise designated below, which is to be shipped from this town to consigned to (a) (merchant, manufacturer, etc.), in the Dominion of Canada, has not been manufactured or produced in enemy territory;

¶ Not including, however, tobacco pipes and stems of wood, mounted with other materials than amberoid, amber, etc. (No. 641).

and he has declared and I have been satisfied that no person other than the declarant (and his principal, Mr.) have any interest in such merchandise.

No. and description of cases.	Marks and Nos.	Weight or quality.	Total value (b)	Contents.	Name of producer or manufacturer.

This certificate is valid only for a period of not more than (c) days from the date hereof, and for not more than (d)

(Signed)

(Signature of person declaring.)

(Signed)

(Signature of consular authority issuing certificate and date.)

(Consular Fee Stamp.)

(a) If desired the word "order" may be inserted here, instead of the name of the purchaser in the Dominion of Canada.

(b) This column may be left blank if desired.

(c) Here insert number of days for which certificate is valid.

(d) Here insert quantity or weight.

SWEDEN.

Shipments from Canada to Sweden via U.S. Ports Must be Covered by Letters of Assurance.

Owing to war measures, embargoes and other exigencies, shipments of goods from Canada to Sweden via United

States ports require to be covered by "British Letters of Assurance" in order to be accepted by the steamship lines for carriage to destination. The British Ambassador at Washington has been issuing Letters of Assurance on behalf of United States shipments to Sweden; and recently he has been authorized to extend this scheme of Letters of Assurance to goods on the Canadian free list. Therefore, application for such British Letters of Assurance might be addressed direct to the Trade Department, British Embassy, Washington. Full particulars as to origin, destination, consignee, description and weight of goods should be furnished along with the application. It is suggested that these particulars be in the form of a sworn certificate.

NEW INCORPORATIONS.

Another new rubber company is promised. The F. E. Partridge Rubber Co., Limited, of Montreal, is incorporated with a capital of \$125,000 with the usual manufacturing powers.

The improved condition in the lumber industry in British Columbia is evidenced by the incorporation of Dominion Shingle and Cedar Company, Limited, New Westminster, B.C., with a capital of \$45,000.

An interesting development is promised in Canadian business in the incorporation of the Dominion Crucible Company, Limited, of Montreal, with a capital of \$200,000. With the recent development of the graphite industry there is apparently a good chance for the development of a successful business along this line.

FOREIGN TRADE OF CANADA.

(Comparison 1914, 1915, 1916.)

IMPORTATIONS.

Month of September.

	1914.	1915.	1916.	1914.	1915.	1916.
Dutiable goods	\$22,575,997	\$22,279,886	\$37,952,740	\$158,584,382	\$124,355,564	\$216,584,807
Free goods	13,991,575	15,750,434	30,813,522	93,103,705	89,236,955	174,380,436
Coin and bullion	15,885,221	597,378	578,686	28,649,741	3,842,177	20,190,318
Duty collected	6,016,606	7,904,995	11,942,791	42,857,086	44,418,033	70,102,854

Five Months Ending September.

EXPORTATIONS.

(For September.)

	1914		1915		1916	
	Domestic.	Foreign.	Domestic.	Foreign.	Domestic.	Foreign.
Products of the Mine	\$5,120,246	\$37,635	\$5,600,416	\$365,113	\$6,981,919	\$13,509
Products of the Fisheries	1,987,669	5,983	2,750,313	8,494	2,366,727	3,029
Products of the Forest	4,945,471	106,030	6,527,625	296,757	5,475,740	9,315
Animals and their Produce	7,063,312	148,461	10,188,424	205,145	12,183,712	235,763
Agriculture	7,478,798	6,641,188	11,139,935	5,863,403	25,164,034	610,775
Manufactures	5,188,314	868,589	9,244,974	676,006	37,801,177	923,525
Miscellaneous	12,803	939,595	678,048	171,229	311,872	190,302
	\$31,796,613	\$8,747,481	\$46,129,735	\$7,586,147	\$90,285,181	\$1,986,218
Coin and bullion	166	354,285	75	144,207	.....	151,604
Total	\$31,796,779	\$9,101,766	\$46,129,810	\$7,730,354	\$90,285,181	\$2,137,822

EXPORTATIONS.

(Six Months Ending September.)

	1914		1915		1916	
	Domestic.	Foreign.	Domestic.	Foreign.	Domestic.	Foreign.
Products of the Mine	\$26,409,370	\$124,831	\$30,096,530	\$6,803,003	\$40,943,415	\$123,798
Products of the Fisheries	7,757,743	64,969	9,433,073	27,184	10,329,868	12,317
Products of the Forest	23,981,614	200,052	28,572,001	301,214	31,253,551	202,274
Animals and their Produce	33,127,196	581,503	44,933,830	1,639,182	53,382,886	1,722,444
Agriculture	57,519,267	28,563,588	59,346,983	14,449,283	206,141,326	3,217,525
Manufactures	31,917,279	3,736,155	71,476,819	3,065,523	190,823,240	4,224,227
Miscellaneous	161,430	2,692,354	2,532,912	699,545	3,847,228	778,564
	\$180,873,899	\$35,963,452	\$246,392,148	\$26,984,934	\$536,721,514	\$10,281,149
Coin and bullion	266	3,459,154	75	68,721,510	1,157	190,700,031
	\$180,874,165	\$39,422,606	\$246,392,223	\$95,706,444	\$536,722,671	\$200,981,180



TRANSPORTATION



By J. E. WALSH

STEAMSHIP SERVICE.

New Lines from Baltimore to Italian Ports are being Inaugurated this Fall.

We have just been advised that the Templeman Steamship Company, N. B. Carlin, Agent Baltimore, Md., inaugurated, on October 15th, a steamship service from Baltimore to Genoa, Italy.

The steamers propose to dock, for the acceptance of cargo, at the Canton piers of the Pennsylvania Railroad, Baltimore.

We are also informed that the above Steamship Company will have a special steamer from Baltimore to Naples sailing late in November, which will take cargoes for Marseilles and Leghorn, and will provide special steamers for the last two named ports if sufficient cargo offers.

It is the understanding that the rates via these boats will be a little lower than those in effect from New York.

The information as to sailings and space available may also be secured from the Pennsylvania Railroads. Canadian office, 56 King St. West, Toronto.

MORE STEAMSHIP FACILITIES.

New York and Cuba Mail Steamship Company Extends Service to Various Southern Ports.

We are just in receipt of information from the N. Y. & C. Mail Steamship Company, with offices at the foot of Wall Street, New York City, in regard to the extension of the service of this line.

They are now in a position to handle shipments from New York to the following ports:—

Country.	Port.	Service.
BAHAMA ISLANDS...	Nassau (New Providence)	Fortnightly service.
CUBA	Havana	Regular semi-weekly service steamers sailing every Thursday and Saturday, supplemented by additional cargo sailings as occasion may require.
	Santiago	Weekly sailings.
	Cienfuegos	Weekly sailings.
	Guantanamo (Naval Station)	Fortnightly sailings.
	Manzanillo	Fortnightly sailings.
	Jucaro	Fortnightly sailings.
	Casilda	Monthly sailings.
MEXICO (East Coast) ..	Vera Cruz	Fortnightly sailings.
	Tampico	Fortnightly sailings.
	Progreso	Fortnightly sailings.
MEXICO (West Coast) ..	Salina Cruz, Manzanillo..	(Via Panama Canal or via Puerto Mexico and Tehuantepec National R.R. to Salina Cruz, with trans-shipment at that port for Puerto Angel, Minizo and Aca-pulco).
PANAMA	Colon (Cristobal)	Monthly sailings.
	Ancon	Monthly sailings.

WEST COAST PORTS OF CENTRAL AMERICA.

Country	Port.	Service.
COSTA RICA	Punta Arenas	Monthly sailings.
NICARAGUA	San Juan del Sur.....	Monthly sailings.
HONDURAS	Amapala	Monthly sailings.
SALVADOR	{ La Union	Monthly sailings.
	{ La Libertad	Monthly sailings.
	{ Acajutla	Monthly sailings.
GUATEMALA	San Jose de Guatemala..	Monthly sailings.

WEST COAST PORTS OF SOUTH AMERICA.

COLUMBIA	} Trans-shipped at Cristobal to steamers of the Pacific Steam Navigation Co., Peruvian S.S. Co., and Columbian Maritime Co., Ltd., for forwarding of cargo to ports in the countries shown.
ECUADOR	
PERU	
CHILI	

They also mention that their new service direct via the Panama Canal to West Coast Ports of Central America and Mexico enables shippers to forward goods to such ports without trans-shipment at the Canal, which is not possible at the present time via any other line.

NEW CLASS RATES.

Tariffs have been Issued by Railways to take Effect December 1st, 1916.

The Carriers have submitted their new Class Rate Tariffs in accordance with the judgment and general order in the Eastern Rates Case.

These tariffs apply between points in Canada east of Port Arthur and Fort William, and will take effect on December 1st, 1916.

The principal railways who have issued their tariffs are as follows:—

Canadian Pacific Railway East; Grand Trunk Railway East; Canadian Northern Railway East; Michigan Central in Canada; Pere Marquette Railway in Canada; Toronto, Hamilton and Buffalo Railway; Wabash Railway in Canada.

In connection with these new tariffs it is a pleasure to note that the Canadian Pacific Railway have consolidated no less than thirty-nine tariffs into six, which will certainly be of great advantage to agents of carriers, shippers and receivers of freight. It is also noted that the Grand Trunk Railway have cut down their issues to a certain extent.

It is suggested that members, if they have not already secured copies of these tariffs, write to the different Railway Companies for those tariffs which they require, so that they may be familiar with the new rates.

It might be pointed out that, while the rates contained in these tariffs are principally advances, there are also reductions, and, in some cases, no changes.

OWEN SOUND INDUSTRY EXPANDS.

The Keenan Woodenware Company, which has been operating in Owen Sound since 1906, is proposing to enlarge the scope of its operations to include the manufacture of refrigerators. For this purpose the plant of the Eureka Refrigerator Co., of Toronto, has been acquired and will be moved to Owen Sound. The Keenan Company is seeking financial assistance from the municipality and, if the necessary by-law carries, a loan of \$15,000 will be arranged. Originally the town loaned the company \$25,000, but this has been reduced to \$14,000. The annual payroll of the company approximates \$80,000 per year.



I N S U R A N C E



SEPTEMBER FIRE LOSSES.

Higher than in August, but Lower than in Corresponding Month of 1914.

According to estimates compiled by the *Monetary Times*, the fire loss throughout Canada for the month of September amounted to \$981,703, as compared with the loss during August of \$803,109, and \$1,116,109 for September of last year. The total for the first nine months of 1916 thus amounts to \$13,080,614, as compared with \$9,969,967 for the first nine months of 1915.

The total fire loss for Canada and the United States during September amounted to \$12,244,625, bringing the total for the first nine months of the year to \$171,779,845, or \$45,000,000 in excess of the corresponding period of 1915.

SASKATCHEWAN HAIL INSURANCE.

Year has been a Disastrous One for the Municipal Co-Operative Commission.

The Saskatchewan Municipal Co-Operative Hail Commission is having a rather disastrous season up to the present time. Claims amounting to \$1,000,000 or over will have to be paid out in hail insurance by the Saskatchewan Commission as a result of the disastrous hail-storms which have occurred to date. During the last couple of weeks over 4,000 claims, it is reported, have come in, and it is believed that the entire revenue for the current year, which will amount to a little over \$1,000,000, will be required to meet these losses.

MUNICIPAL BONDS AND FIRE PROTECTION.

Bonds of a Well-protected Municipality have an Advantage in the Money Market.

In the course of an address given before the Ontario Municipal Association, Mr. John B. Laidlaw drew attention to the intimate relation between efficient fire protection and the value of municipal bonds. He said:—"You are interested in municipal financing and perhaps overlook how materially your ability to sell your debentures at a good price depends on how effective are your fire preventative measures. No bond-broker cares to offer to his clients the debentures of a town or city a good part of whose assets are frequently disappearing in smoke. They prefer to sell the debentures of the well-managed place which does not allow its citizens to recklessly endanger their own and their fellow citizen's property, and which maintains a thoroughly efficient waterworks system and good fire brigade. They know that the assets of such a place are a much better security than those of the other, and the careless town pays a heavy tax every year through higher interest on its debentures."

FIRE HAZARDS IN MUNITION PLANTS.

Greater Safety Precautions Have Been Taken Since Munitions Business Started.

An interesting report has been issued by the fire underwriters in New England in regard to the risks which are being carried by the companies in munition plants in Canada and the United States.

The growth of the munitions business has resulted in greater precautions for safety being taken in many factories that were not operated with success prior to the war. They have since become successful, thus minimizing the moral hazard. Overtime also has a tendency to minimize the risk, inasmuch as when workpeople are on the premises all the time any incipient fire is more likely to be arrested before actual damage is done.

The following are the principal features of the report:—

Prolonged hours of labor, night work, etc., have increased the period of action of the active special or manufacturing hazards.

A tendency towards uncleanness has been created or enhanced by long hours of labor, the difficulty of obtaining satisfactory help, the increased congestion of equipment and material, and, above all, by the failure of superintendents, through pressure of other business, to give proper and routine attention to matters of housekeeping.

The introduction into established risks of new manufacturing or special hazards and processes. In some cases there has been failure to protect these in a satisfactory and permanent manner on the assumption that they were of a temporary character. In other cases there has been failure to realize the true nature of the hazard involved and an ignorance of established methods of protection.

Labor Conditions Have Bearing.

Strikes and other evidences of unsettled labor conditions have had a bearing upon the fire risk.

Failure to produce, under war orders, goods acceptable to inspectors of the foreign governments has resulted in accumulation of rejected products, which represent heavy losses to the manufacturers. This condition suggests the question of moral hazard.

Incendiarism springing from a desire to cripple plants producing goods is a subject given much attention in newspapers. While there have been incendiary fires in "war order" plants in New England, it would seem that they have resulted from the individual efforts of misguided men. There is certainly little evidence to show that any well-studied, intelligent or organized effort has been made to cripple factories by violence, in this section of the country at least, but there are indications that financial means have been tried to embarrass the efforts of certain munition plants.

When War Demand Ceases.

Another question of moral hazard has been raised by the visualization of conditions which may exist, when the war demand ceases, in those plants equipped particularly for "war business." This point raises a most interesting economic problem. There are a number of concerns which have built and partially equipped large plants for the production of munitions, but which have not yet produced appreciable quantities of acceptable goods. If the war should cease within a year these concerns might find themselves in a critical condition. Established plants manufacturing munitions as a side line may feel a period of depression during the readjustment which must follow the war, but in most cases this should not affect them seriously.

The value, in times of peace, of equipment installed for the manufacture of munitions varies with each individual case. In a general way it may be said that machinery, that is, lathes, presses, etc., are of permanent value, while large quantities of dies, tools, patterns and gauges will be of slight value when the war demand ceases. The cost of the latter may be considered as an expense of manufacture rather than as a capital charge against a business. In certain instances, however, the value lost in investing in such dies, patterns and gauges will be very large, and these cases will be found in those newly-established munition plants which were late in getting into the field, and the net volume of whose total product is small. On the whole, this class of business has proved profitable to the insurance companies both in Canada and the United States.

TRADE ENQUIRIES

These enquiries come into our hands from various sources. The Weekly Bulletin of the Department of Trade and Commerce, from which the enquiries indicated in the sub-heading allotted to them are taken, should be read regularly by those interested in foreign trade. It will be sent free on application to the Department at Ottawa. The names connected with all those enquiries can be furnished direct from the Commercial Intelligence Department, Canadian Manufacturers Association, Toronto.

DOMESTIC TRADE ENQUIRIES.

- 585. **Machinery for Grinding Infusorial Earth.**—An engineer in St. John, controlling properties on which large quantities of infusorial earth are to be found, desires to get in touch with Canadian firms making machinery for grinding and preparing this material for the market.
- 586. **Automatic Tag Machines.**—Information about firms making these machines is desired for an official organization.
- 587. **Staples for Butter Box Labels.**—Information about firms making these machines is desired for an official organization.
- 588. **Staples for Papers.**—Information about firms making these machines is desired for an official organization.
- 589. **Fork Tines and Shovel Blades.**—A Western correspondent is desirous of getting into communication with firms able to supply these parts.
- 590. **Coiled Springs.**—A Western bedding company would like to hear from manufacturers who produce machines that make coiled springs.
- 591. **White Chilled Iron.**—A Western Ontario house using considerable quantities is interested in knowing where to obtain supplies of white chilled iron.
- 592. **Silica Brick.**—A Western Ontario house would like to hear from firms able to supply No. 1 arch, No. 2 arch, No. 3 arch and 9-inch silica brick.

EXPORT TRADE ENQUIRIES.

- 593. **Asbestos Millboard.**—A New York export house would like to hear from Canadian manufacturers capable of supplying the above-mentioned commodity.
- 594. **Straw Paper.**—A West Indies manufacturers' agent, formerly representing German houses, would like to hear from Canadian firms capable of supplying straw paper. Particulars on financing, etc., can be supplied.
- 595. **Nails.**—A West Indies manufacturers' agent, formerly representing German houses, would like to hear from Canadian firms capable of supplying nails. Particulars on financing, etc., can be supplied.
- 596. **Tools, Wrought Iron Tubes, Hardware.**—A firm of manufacturers' representatives in Wellington, N.Z., who claim to be able to furnish satisfactory commercial, professional and financial references, desires to secure sole agencies in the above-mentioned or similar lines.
- 597. **Pumping Machinery.**—A Sydney house, claiming to do a large business with Australian Government Departments, are interested in obtaining geared power pumps, triple ram type, with belt drive or direct coupling, and also deep well pumps for power. They offer New York references.
- 598. **Agencies.**—A house in Melbourne, Australia, offering Australian references, desires to obtain representation of Canadian manufacturers of a wide range of goods, including chemicals, iron and steel products, glassware,

leather goods, foodstuffs, textiles and dry goods sundries.

- 599. **Wheels for Toys.**—A New Zealand merchant is considering the manufacture of toys and would like to hear from Canadian manufacturers who are in a position to supply him with small wheels, either of wood or iron.
- 600. **Agencies.**—An Australian house is desirous of obtaining the agency for Canadian manufacturers of handbags, silvered glassware, felt slippers, carriage wheels, parts and hardware.
- 601. **Electric Stoves, Lamps, Wire, Supplies.**—Representative of several American houses, now traveling in South America, would like to secure additional agencies in the electrical line, including electric.
- 602. **Iron Oxide.**—New York exporter solicits quotations on iron oxide powder for use in the manufacture of paint.
- 603. **Canvas Belting, Machinery Supplies.**—A firm in Spain is desirous of extending its business in the lines mentioned, and requests catalogues and offers in the Spanish language.

EXPORT TRADE ENQUIRIES TAKEN FROM THE WEEKLY BULLETIN OF THE DEPARTMENT OF TRADE AND COMMERCE.

- 604. **Garden Tool Handles.**—A Sheffield firm wishes quotations from exporters in a position to supply the above. Specifications may be obtained from the Department of Trade and Commerce, Ottawa.
- 605. **Corundum.**—A Middlesborough firm makes inquiry as to the possibility of obtaining supplies of the above from Canada.
- 606. **Cart and Carriage, Iron and Steel, Hardware.**—A Johannesburg firm of coach builders requests catalogues and price lists on all cart and carriage hardware.
- 607. **Cart and Carriage Woodenware.**—A Johannesburg firm of cart and carriage builders will purchase Canadian carriage woodenware, including three-ply woods and other carriage woods.
- 608. **Acetone—Acetone Oil.**—A Russian company desires to hear from Canadian producers of acetone and acetone oil for denaturing alcohol, for immediate delivery. Prospects of regular trade after the war also good. Quotations required for New York.
- 609. **Gas Globes and Chimneys.**—A large Bristol firm of manufacturers and merchants desire to obtain from Canada gas globes and chimneys.
- 610. **Glass Milk Bottles.**—A Johannesburg firm asks for illustrations and prices on milk bottles, and other kinds of glassware.
- 611. **Toys.**—A well-known firm in Barbados makes inquiry for Canadian toys.
- 612. **Hosiery.**—An old-established dry goods house in St. John's asks for Canadian manufacturers of women's plain black cashmere hose—winter and summer weights—medium to best quality—in sizes 8½ to 10 inches foot, also misses' hosiery to match English sizes Nos. 1 to 6. Exporters are asked to send samples and give prices and terms.
- 613. **Stearo.**—A well-known commission agent in St. John desires to be put into touch with Canadian dealers in "stearo" or an equivalent ingredient used in the manufacture of butterine.
- 614. **Corsets.**—A Durban firm asks for full particulars from Canadian manufacturers, with samples on leading lines.
- 615. **Dolls.**—A Durban firm are interested in hearing from Canadian manufacturers of dolls and toys. Full particulars submitted to them by return mail will have their consideration for immediate business.

The Merchants Bank of Canada

Head Office - MONTREAL

Capital Paid-up - - - - \$7,000,000
Reserve Fund and Undivided Profits 7,250,984

BOARD OF DIRECTORS

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A GENERAL BANKING BUSINESS TRANSACTIONED

212 BRANCHES AND AGENCIES IN CANADA

Extending from the Atlantic to the Pacific

SAVINGS DEPARTMENT AT ALL BRANCHES

Deposits received and Interest
allowed at best current rates

New York Agency: 63 and 65 WALL ST.

616. **Tires.**—A Johannesburg firm, handling this commodity in a big way, will be glad to receive catalogues, price-lists and other information from tire manufacturers. Also sample and particulars of tires for perambulators.
617. **Manganese Dioxide.**—A South African firm, handling from 20 to 30 tons of fine powder manganese, makes request for quotations of this ore from Canada.

Condensed Advertising

FACTORY FOR SALE.

Factory building, specially built for wood-working; 20,000 sq. feet floor area; also 3¾ acres of land and railway siding; in Ontario town. For sale cheap. Address INDUSTRIAL CANADA, Box 2, Toronto.

POSITION WANTED.

WANTED, a position where experience, ability, efficiency and reliability count; 20 years actively engaged selling, correspondence, management; temperate; references. Box 27, INDUSTRIAL CANADA Office, Toronto.

FOR SALE.

An exceptional opportunity for acquiring a factory is offered by Boswell's Brewery in the large block of buildings, with railway siding, at Beauport, Que. Particulars are given in their advertisement, page 873, this issue of INDUSTRIAL CANADA. Apply to Boswell's Brewery, Quebec, P.Q.

POSITION WANTED.

Thoroughly experienced man, age 32, having wide acquaintance in Toronto and Ontario, desires to represent substantial and progressive manufacturer. For full particulars, address A. B. C., INDUSTRIAL CANADA Office, Traders Bank Building, Toronto.

AGENCIES WANTED

The undersigned is open to represent one or two responsible manufacturers in the City of Hamilton on a commission basis. Has extensive acquaintance with the general manufacturing interests of the city, and can furnish excellent references.

Address, CHAS. A. MURTON,

34 King William St., Hamilton, Ont.

Former Secretary Hamilton Branch
Canadian Manufacturers' Association.



NOTICE

To Manufacturers, Dealers,
and Users of Steam Boilers.

All steam boilers built in, or entering the Province of Ontario, and boilers exchanged or repaired, are subject to Government Inspection as prescribed in the Steam Boilers Act, 3 George V., C. 61.

Before any work of repair or alteration is commenced on any boiler, notice must be sent to the Department stating the nature and extent of the repairs or alterations proposed to be made. If the Chief Inspector should consider such repairs or alterations of an extensive character, the boiler must be inspected in accordance with the Regulations by an Inspector authorized under the Act.

All communications should be addressed to the Steam Boiler Branch, Department of Public Works, Parliament Bldgs., Toronto.

HON. F. G. MACDIARMID, D. M. MEDCALF,
Minister of Public Works. Chief Inspector of Steam Boilers.

DELANY & PETTIT, LIMITED

Joint and Veneer

Glue

Always uniform.

OFFICE:

133 Jefferson Avenue,
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Special Woodworking
Garnet Paper and
Cloth

WORKS:

105-131 Jefferson Avenue
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Established
1849**BRADSTREET'S**

Capital and Surplus - - \$1,500,000

Offices Throughout the Civilized World

Executive Offices: Nos. 346 and 348 BROADWAY, N.Y. CITY, U.S.A.

THE BRADSTREET COMPANY gathers information that reflects the financial condition and the controlling circumstances of every seeker of mercantile credit. Its business may be defined as of the merchants, by the merchants, for the merchants. In procuring, verifying, and promulgating information, no effort is spared, and no reasonable expense considered too great, that the results may justify its claim as an authority on all matters affecting commercial affairs and mercantile credit. Its offices and connections have been steadily extended, and it furnishes information concerning mercantile persons throughout the civilized world.

Subscriptions are based on the service furnished, and are available only by reputable wholesale, jobbing and manufacturing concerns, and by responsible and worthy financial, fiduciary, and business corporations. Specific terms may be obtained by addressing the Company at any of its offices. CORRESPONDENCE INVITED.

Offices in Canada

Edmonton, Alta.

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THOS. C. IRVING, Gen. Man. Western Canada, Toronto

BRYAN PONTIFEX
CHARTERED ACCOUNTANT

Factory Accounting a Speciality

EXCELSIOR LIFE BUILDING
TORONTO STREET
TORONTO

Phone Main 1327

Great Opportunity
FOR FACTORY, MILL or FOUNDRY
For Sale at Beauport, Que.

LARGE BLOCK of substantial buildings in good repair, with two 70 horse-power boilers installed. Railway siding on site. Six minutes from city. Electric cars pass through property every 15 minutes. Beauport station adjoining. Also situated on main Electric Light and Power Line. Extends to River St. Lawrence; good wharf accommodation for unloading barges on property; a small river also runs through its length.

This attractive lot of land contains about half million feet, part of site being available for first-class building lots, without interfering with factory.

For manufacturing purposes, this property offers many advantages, being within easy reach of the city, but free from city taxes, and being situated in one of the most populous villages on the St. Lawrence, where good and cheap labor can easily be obtained.

Further particulars will be furnished on applying to

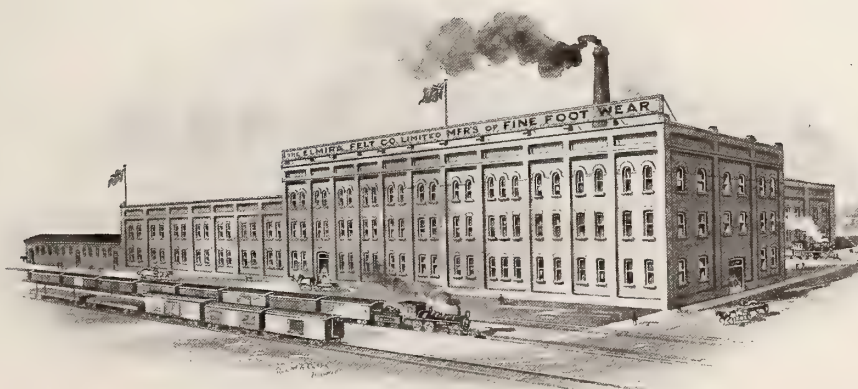
BOSWELL'S BREWERY
QUEBEC

AEROPLANE PRODUCTS, LIMITED

44-50 PEARL STREET, TORONTO, ONT.

Aeroplane Metal Fittings, and all classes of machining, stamping, welding, brazing.

Prompt Deliveries.

FOR SALE**Factory and Five Acres of Land**

in one of the BEST industrial towns of Ontario.

PRIVATE RAILWAY SIDING

Splendid Shipping Facilities,
G.T.R. and C.P.R.

For further particulars apply to

G. W. CHARLES
Kitchener, Ont.



THIS ROW STARTED SOMETHING!

Pay-time disputes had been common until the last big one
when three of the best men threatened to quit
and then the Boss woke up

The old-fashioned time-keeping system was to blame. No use expecting a human time-keeper to work without making mistakes or showing likes and dislikes.

No use expecting labor to stand for this kind of thing, especially now-a-days when pay is high and jobs are a-plenty.

So, as we said, this row started something. Some one mentioned

International Time Recorders

and how popular they are with the most up-to-date plants in Canada, big and small.

Said the boss: "Why use machinery to save labor and mistakes in every department of my business and not use it in connection with the most important raw material purchase I make: labor-time? *Also my employees need protection as well as I do.* I'll get the facts right away."

And he did. And we got the order. And he got a cold-blooded, deadly-accurate, time-recording system where the men make their own time-records, get paid for every minute they work—but no more—and everybody is happy.

Let us do this for you!



The International Time Recording Co. of Canada, Limited

Anderson St., Toronto
F. E. Mutton, Gen. Mgr.

Winnipeg
400 Electric Ry. Bldg.

Vancouver
817 Pender St. W.

Montreal
Cor. McGill and Notre Dame Sts.



That Started Us Making Real Money!

"There's the greatest diplomat and peace-maker in the world. It stopped that leak we couldn't trace"

No one can say too much in favor of the modern Time Recorder once it is installed. The workman knows that it plays no favorites. His time-record is bound to be accurate because he made it himself. The superintendent is pleased because costly pay-roll labor disputes are things of the past. The employer is delighted because his overhead burden goes down and his output goes up.

International Time Recorders

These are not fanciful generalities. They are sober facts being demonstrated thousands of times a week all over Canada.

Let us tell you what we have done for the world's employers who use time-recording systems. We saved them money. We can save it for you.

How many employees have you? What is your business? What is your present time-recording and pay-roll system? Tell us that for a start.

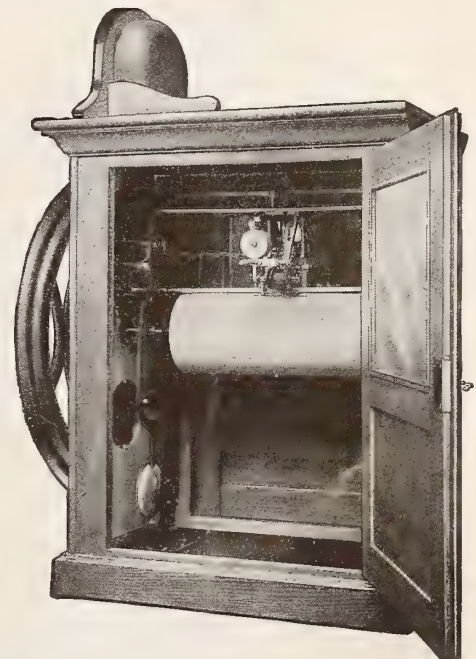
The International Time Recording Co. of Canada, Limited

Anderson St., Toronto
F. E. Mutton, Gen. Man.

Winnipeg
400 Electric Ry. Bldg.

Vancouver
817 Pender St. W.

Montreal: Cor. McGill and Notre Dame Sts.



Showing the interior mechanism of a modern International Dial Recorder, \$100 and up

AMONG THE INDUSTRIES

Under this heading are published items of news of current interest concerning the activities of Canadian manufacturers. Information about changes of interest, enlargement of plants, and plans for future developments are always welcome, and are published free of charge, provided they should not be properly classified as advertisements.

*Items prefixed with an asterisk are based on official information received in each case from the companies mentioned. Other items, while secured usually from reliable sources, have not the same authoritative origin.

ALBERTA.

Calgary.

The Robin Hood Flour Mill, Limited, Fourth Street West, propose to erect offices at an approximate cost of \$20,000, and tenders have been received.

BRITISH COLUMBIA.

Chilliwack.

The Chilliwack Evaporating and Canning Company, Limited, are completing construction of their plant at Chilliwack, B. C., and are about to instal machinery. The plant will have a capacity of 85 tons of fresh vegetables daily, and will give an output of 15 tons of dessicated fruits and vegetables daily, employing 75 hands. Large contracts are on hand for shipment to Europe. This plant makes the fourth large evaporating plant operating on European contracts in this province.

New Westminster.

Negotiations are still under way between the City Council and John R. Duncan regarding a site for an extension to the Vulcan Ironworks.

Port Hammon.

An extension of the Hartnell Lumber Company's plant, which will practically double its output, is under way. One new dry kiln has already been erected, and another will be started shortly. A new boiler is being installed.

Quatsino Sound.

Announcement has been made during the month that two large new mills for the manufacture of sulphite pulp will be erected at once, one by the Empire Pulp and Paper Company, Limited, Quatsino Sound, with a capacity of 40 tons per day, and the other by the Colonial Pulp and Paper Company, Limited, at Swanson Bay, with a capacity of 70 tons per day. The Ocean Falls plant of Pacific Mills, Limited, is nearing completion and will be in operation next March. When these three mills are completed the output of paper will be, for the five companies operating in this province, 130,000 tons of paper per annum and 100,000 tons of chemical pulp, against the present output of 50,000 and 30,000 respectively.

Steveston.

The rolling mills in the old Dominion Safe Works at Bridgeport, which were burned to the ground about a month ago, have been opened again in a temporary way, but arrangements are under way for the re-building of the structure.

Trail.

Over 175 tons of fabricated steel are required for the addition to the electrolytic zinc plant of the Consolidated Mining & Smelting Company. The new building is 165 by 200 feet, and the work of erection is well under way.

CHEMICALS

ACIDS

All Strengths

SULPHURIC	} Commercial and Chemically Pure
MURIATIC	
NITRIC	
MIXED	
ACETIC	

GLAUBER SALT
AQUA AMMONIA
Commercial or C. P.
ANHYDROUS AMMONIA
SALT CAKE
SOLDERING FLUX
TINNING FLUX
ZINC CHLORIDE
AMMONIA CHLORIDE
(Sal Ammoniac)

SILICATE OF SODA
BICARBONATE OF SODA
CAUSTIC SODA
HYPO SULPHITE OF SODA
SULPHIDE OF SODA
(all forms)
BI-SULPHITE OF SODA
etc., etc., etc.

Grasselli Lime Sulphur Solution and Lead Arsenate
FOR TREE SPRAYING

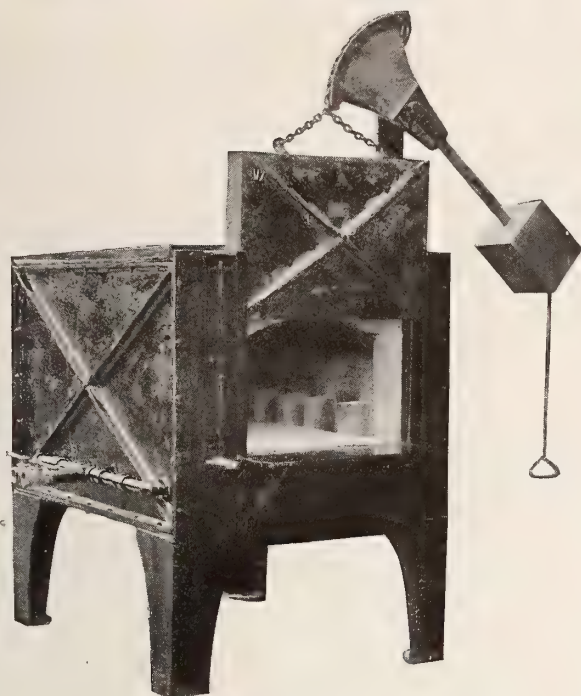
The Grasselli Chemical Co.

HEAD SALES OFFICE : TORONTO, ONTARIO

Limited

Branch Sales Office, Montreal, Que.

Works : Hamilton, Ont.



RETURN IT

IF IT WILL NOT DO YOUR WORK

TELL US the work to be done and we will supply a furnace to do it. If, at the end of thirty days, the furnace does not demonstrate to your entire satisfaction that it will do the work, return it.

CANADIAN HOSKINS LIMITED

Electric, Gas and Oil Furnaces and Pyrometers

Sales Offices:

MONTREAL—224 St. James St.

TORONTO—Traders Bank Building

Factory and General Offices: WALKERVILLE, ONT.

McKenzie Sensitive Bench Drill

Built for rapid drilling on all classes of work up to 5-16 inch.

You will find this machine, as others are finding it, thoroughly reliable.

The spindle is driven by a 1-inch flat belt and has two speeds. This machine is entirely relieved of belt strain and is counter-balanced by a weight inside of frame. It is also provided with a means for taking up wear.

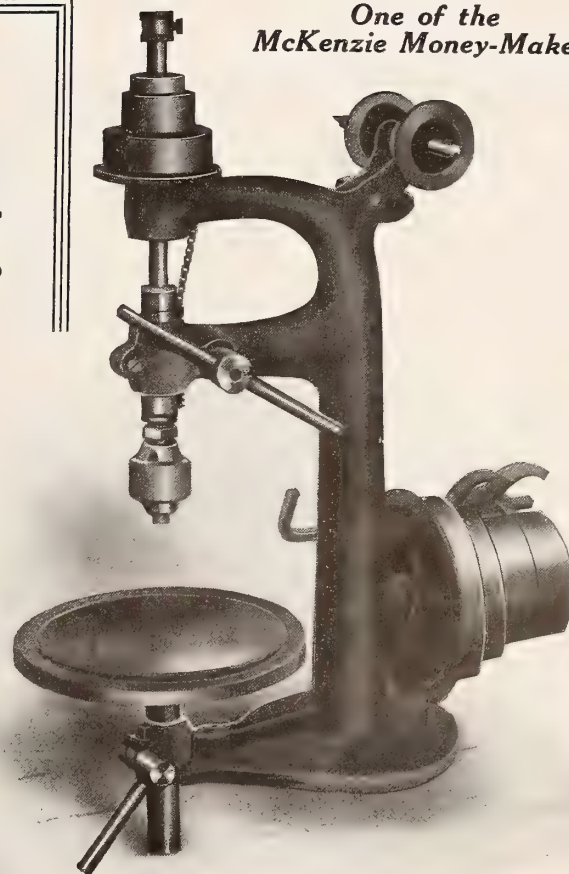
**EVERY ONE TESTED BEFORE
LEAVING FACTORY**

*Write us for Illustrated Circular
of our full line.*

D. McKenzie Machinery Company

17 Gordon Street
GUELPH, ONT.

*One of the
McKenzie Money-Makers*



Vancouver.

If satisfactory arrangements can be made with the city, the Vancouver Shipyards, an old-established firm on Coal Harbor, proposes to extend its plant and construct steel steamers.

The re-opening of the plant of the Pacific Steel Products, Limited, at Bridgeport, on Lulu Island, near Eburne, has been followed by rapid development. The plant is now running steadily and is turning out about ten tons of iron and steel daily and within the next sixty days, it is said, the capacity of the plant will have been trebled and the output increased to at least thirty tons daily. The company is putting in an open hearth furnace for the making of billets from scrap iron. In addition to the rolling mills and furnaces, two large machines for turning out railroad and boat spikes, bolts, nuts, etc., are being installed, a line of manufacture which will be extended to other articles of a similar nature now shipped in from eastern foundries.

The Vancouver Engineering Works, Limited, are enlarging and remodelling their offices, which will occupy much larger space than heretofore. The pattern warehouse is also being remodelled, and the whole plant overhauled and repainted.

Important developments at Port Mann, involving the inauguration of the new Canadian Northern car ferries and the opening of the car building plant, have been announced by M. H. McLeod, General Manager of the company. The car plant, he said, will be in operation very shortly and cars will be turned out before the end of the year. It is the intention of the company to work the plant to its full capacity of five cars a day, involving a daily output of about \$60,000 worth of rolling stock.

South Vancouver.

The Dominion Creosoting Co., Limited, are building a large addition to their plant. A specialty is made of ready made, knock-down granaries, which can be fully erected in four hours, and large orders have been received from the prairies.

MANITOBA.**Winnipeg.**

A cold storage plant will be erected here this fall by a new company to be known as the Ontario and Manitoba Cold Storage Company. Charles Chamberlain, of this city, is interested.

Grand Rapids.

Final plans are now being prepared for a \$2,000,000 pulp and paper mill to be erected here by the Manitoba Power, Pulp & Paper Co., Limited.

NEW BRUNSWICK.**Marysville.**

The general contract for the erection of a brick warehouse for the Canadian Cottons, Limited, has been awarded.

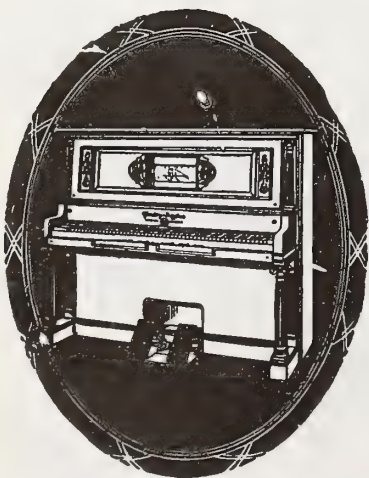
Moncton.

Tuttle Brothers are building an addition to their casket factory at an estimated cost of \$40,000. The two sons recently succeeded their father, A. A. Tuttle, and, being practical embalmers, a large business as funeral directors is done by them in Moncton.

Men forget business cares in the enjoyment of

Gourlay-Angelus

Player-Pianos



A GOURLAY-ANGELUS provides ANYONE with the ability to play ANY music artistically.

In the opportunity for recreation thus afforded, many busy men find enjoyment hitherto undreamed of, as well as a complete rest from the business worries and cares of the day. If you find it hard to leave these cares behind you when you go home, depend upon it, a Gourlay-Angelus will make you forget them.

One Toronto manufacturer tells of this pleasure in a Gourlay-Angelus as follows:—"I have always been glad I purchased the Gourlay-Angelus. The longer I have it the more I enjoy it and the more I use it."

Write for Catalogue and Prices

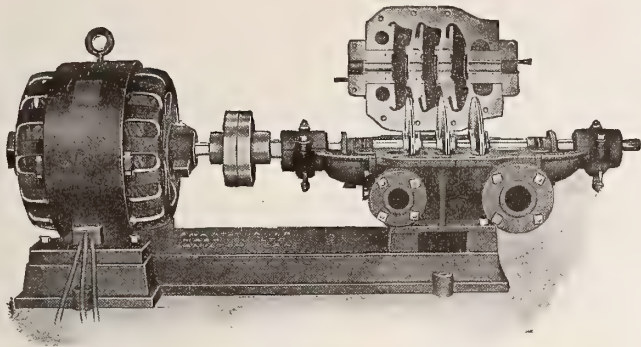
GOURLAY, WINTER & LEEMING,
188 Yonge St., Toronto

Steam and Power Pumps

VERTICAL AND HORIZONTAL

CENTRIFUGAL PUMPS

FOR EVERY SERVICE



When next in the market, submit your specification to us.

The Smart-Turner Machine Co.

HAMILTON, CANADA Limited

"Metallic"

Building Materials

"M R Co" Ceiling and Wall Plates
handsome, easily put on

make the most up-to-date, fire-proof covering your money can buy. New patterns, finest ever shown in Canada—and made here. Big stocks, prompt shipment.



THE METALLIC ROOFING CO., Limited

Manufacturers of
"Eastlake" Shingles, "Empire" Corrugated Iron, etc., etc.
TORONTO - ONTARIO



**T
H-E**

Good Light Pays

Don't let a valuable workman spoil his eyes, his temper and your product by giving him a dim, half-dead, inefficient lamp to work by. Good light means contentment of mind, steady labor and improved product. "Good Light" means Hydro current—there you get "the best service—at cost."

We estimate and advise on lighting systems free of charge.

Toronto Hydro-Electric System

226 Yonge St.

Phone Adel. 2120



This Man is as Efficient as His File—

—and because he's a skilled mechanic, he prefers to work with one or other of the "Famous Five" Files.

He likes their balance. He appreciates the quality of the steel in them and the innumerable grades of Files he can obtain to fit the different kinds of work he has to do.

If you could take a vote from among the men in your factory, you would find that they all know the "Famous Five" and prefer to work with them.

It is just as well to specify them when ordering.

THE FAMOUS FIVE ARE:



When writing advertisers, please mention INDUSTRIAL CANADA.

St. John.

T. McAvity & Sons, Limited, have recently issued a patriotic leaflet which shows that five members of the firm and 70 employees are at present on active service; one employee has died on active service and another was killed in action.

It is understood arrangements are almost completed for the sale of the Edward Partington Pulp and Paper Co., Limited, in New Brunswick, to Portland, Me., capitalists, headed by Hugh Chisholm. The new owners may build a pulp mill at Marysville.

St. Stephen.

Haley and Sons' lumber and planing mill was totally destroyed by fire on October 17th. Loss, \$100,000; insurance, \$58,500.

NOVA SCOTIA.

Sydney.

Work is about to start on a mill for the Atlantic Milling Company, Pictou, N. S., to cost \$60,000.

ONTARIO.

Acton.

A by-law has been carried authorizing a loan and grant of a free site to the Reliance Shoe Company, 350 Sorauren Ave., Toronto, and the company will build a large factory.

Amherstburg.

A Canadian branch of the Solval Process Company of Syracuse, N.Y., is about to be established here. Reports state that an issue of \$300,000 of stock has been made to provide funds for building and equipping the new plant.

Belleville.

The general contract for the erection of a machine shop for J. C. Wilson & Company, Glenora, Ontario, has been let at an approximate cost of \$15,000.

Bracebridge.

On November 20, ratepayers of the town will vote on a by-law granting concessions to the Beacon Match Co., Limited, a company organized last August under the provisions of the Ontario Companies Act. In return for a bond guarantee of \$15,000 and a fixed assessment of \$10,000 for ten years, the company undertakes to establish a plant which, with land and buildings, will be worth not less than \$45,000, and which will have a capacity of not less than 100 cases of matches per day. At the end of eighteen months from the date of commencement of manufacturing, the company agrees to employ an average of not less than fifty employees per year during the period of currency of the guaranteed debentures and to pay out an average of not less than \$25,000 per annum in wages and salaries during the same period. It is pointed out in the memorandum of agreement that large quantities of matches are now imported into Canada and Great Britain from enemy and neutral countries and that Great Britain will probably grant a preference to matches made within the Empire. For both reasons it is advisable to take advantage of the present opportunities to organize and carry on a match-making industry. Bracebridge has been selected as the location of the industry by reason of the materials available in the neighborhood.

THE NICHOLS CHEMICAL COMPANY, LIMITED

MANUFACTURING CHEMISTS

HEAD OFFICE: 222 ST. JAMES STREET, MONTREAL

Branch Office—120 Mill Street, Toronto

WORKS: Capelton, Que., Sulphide, Ont., Barnet, B.C. WAREHOUSES: Montreal, Toronto

Sulphuric Acid
Muriatic Acid
Nitric Acid
Hydrofluoric Acid
Mixed Acid

Sulphate Soda
Sulphide Soda
Hypo-Sulphite Soda
Bi-Sulphite Soda
Phosphate Soda

Glauber's Salt
Blue Vitriol
Sulphate Alumina
Papermaker's Alum
Caustic Soda

Bleaching Powder
Tri-Sodium Phosphate
Ammonia
Salt Cake
Tin Crystals

Agents for Baker & Adamson's Chemically Pure Acids and Chemicals
AGENTS FOR CANADIAN SALT CO.—"WINDSOR" BRAND CAUSTIC SODA & BLEACHING POWDER



\$141,017.00 worth of abrasive wheels imported into this country in the last fiscal year, that should have been "MADE IN CANADA."

We can furnish the Canadian made goods of the best natural and artificial abrasives, by the vitrified or silicate process; in the latter, with or without the wire web.

Can be obtained from the following supply houses:

J. R. BAXTER & CO., LTD.
Montreal

H. W. PETRIE LTD.
Toronto

McDOUGALS LTD.
Ottawa

COWAN HARDWARE CO.
London

WALKERVILLE HDW. CO.
Walkerville

NORTHERN CAN. SUP. CO.
Cobalt

Or direct from the manufacturers,

DOMINION ABRASIVE WHEEL CO., LTD.
NEW TORONTO, ONT. CANADA

TANKS

FOR PULP AND PAPER MILLS, CHEMICAL WORKS, OIL REFINERIES, ETC.

STEEL STRUCTURES

TO SUPPORT TANKS

WRITE FOR QUOTATIONS

MacKINNON, HOLMES & COMPANY, LIMITED

SHERBROOKE, QUEBEC

JULIUS COHEN & JOSEPHY

*Foreign
Domestic*

WOOL

*Noils, Wastes
and Shoddy*

Also operating THE YORKSHIRE WOOL STOCK MILLS, TORONTO
Manufacturers of Pulled Shoddies

H. V. ANDREWS Canadian Representative **13 Church St., Toronto**

Cornwall.

Contract has been awarded for the erection of an addition to the premises of the St. Lawrence Brewery Company. The estimated cost is \$20,000.

Deseronto.

A by-law has been carried authorizing certain concessions to the Dominion Hardwoods, Limited, and the company will probably proceed with the rebuilding of their plant.

Dundas.

John Bertram & Sons Co., Limited, are having plans prepared for an office building, estimated to cost \$35,000, but tenders may not be called until next spring.

Ford.

The general contract has been let for the erection of an addition to the plant of the Ford Motor Company. The building will be of reinforced concrete, brick and steel construction and will cost approximately \$100,000.

Fort William.

The complete plant of the Superior Tile Company, located at Rosslyn Village, near Fort William, Ont., is now in operation and is stated to be turning out something like 35,000 brick per working day. Officials of the company say they have enough orders on hand to keep the plant running for some time. Between 35 and 40 men are now employed and the number may soon be increased. A new drying shed, which was recently completed, is now in operation.

BEVERIDGE PAPER CO., LTD.

Paper Mill Agents—Merchants—Mill Supplies

The mills we represent can supply promptly all qualities Wrappings, including Waterproof Papers which the Department of Trade and Commerce urges exporters to use, and our twine reinforced "Tufenuf" replaces Burlap. Also genuine Parchments, Glassines, and Blottings.

Steam Plants: PROTECTO and PROTECTOCOAT will cut your fuel bill 25 to 50%, and not pollute steam. Let us quote you on your paper wants, and send you our Boiler Preservative Booklet—it will pay!

Buy Matches As You Would Any Other Household Commodity —With An Eye to Full Value!

When you buy Eddy's Matches,
you receive a generously-filled
box of SURE, SAFE Lights

ASK FOR
EDDY'S "SILENT PARLOR" MATCHES

To Parties Manufacturing, or Intending to Manufacture, in Canada

WE are prepared to produce, upon a large scale, articles of metal and wood.

Our facilities are those necessary for the extensive and economical manufacture of the heaviest freight cars and the highest class of passenger cars. These facilities include plants for the manufacture of steel, malleable and grey iron castings—rolled steel and iron products—frogs, switches and track work for electric and steam railways—coil and elliptic springs—forgings—cabinet and other wood work—and all preparatory and finishing adjuncts.

The various plants are distributed from Amherst, N.S., to Fort William, Ont.

Correspondence invited.

Please address Sales Department,
P.O. Box 180, Montreal

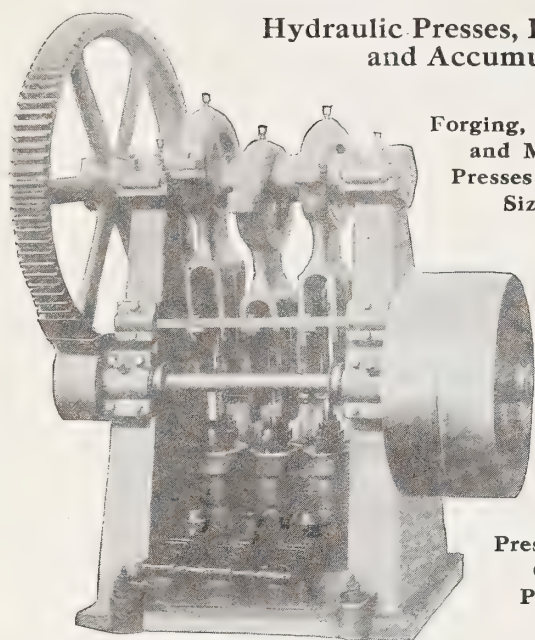
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Made in Canada

**Hydraulic Presses, Pumps
and Accumulators**

**Forging, Nosing
and Marking
Presses for all
Size Shells**



**Presses for
General
Purposes**

WILLIAM R. PERRIN, Limited
Toronto, Canada

Galt.

A permit has been taken out for an addition, 30 by 40 feet, to the plant of the Wells Bros. of Canada, manufacturers of taps and dies, on Front Street. The estimated cost of the building is \$2,000.

The Dodge Metal Hose Company of Canada, Limited, has decided to erect a \$50,000 plant here. The company is organized under a Dominion charter, with authorized capital of \$150,000. The following Toronto business men are officers:—President, William Lennox; Secretary-treasurer, Harvey O. Bee; Directors, John McNaughton, John Manson and E. J. Adams. James R. Cameron, of Toronto, formerly of Galt, is to be Works Manager. The company will manufacture malleable iron hose to replace the rubber hose used to couple the air line between railway cars, and also has Canadian patents on five other articles.

Contract has been awarded in connection with the erection of a storehouse for the Goldie and McCulloch Co., Limited. Contracts will also be let for roofing and galvanized iron work.

Georgetown.

Harley-Kay, Limited, knitting machine builders, have recently acquired the machine business and plant of the Georgetown Foundry and Machine Company. New buildings will be erected at once to accommodate the growth of the Harley-Kay business and for the manufacture of additional lines. They report an increase in sales to July 1st of over 100 per cent. The extensions will represent an investment of \$15,000.

ALWAYS USE

Hammer Brand Plaster of Paris

Manufactured for Half a Century—the Standard of Excellence



**Try it and Compare
Its Surface Covering Capacity
With Other Brands**

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ALBERT MANUFACTURING CO.
Hillsborough, New Brunswick, Canada

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Wire Cloth

of every description



Our Double Crimp process of weaving ensures a very rigid fabric. Our production is second to none. Our prices are right.

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Hamilton, Ont.

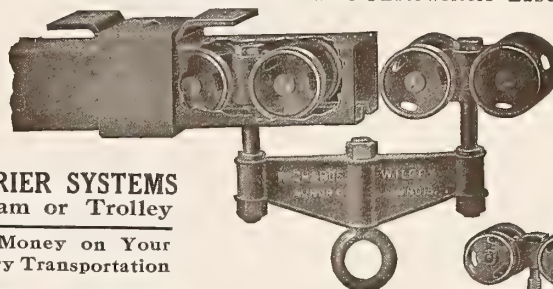
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Parallel Door Hardware



Fire Door Hardware—All Styles
with Underwriters' Label



CARRIER SYSTEMS I-Beam or Trolley

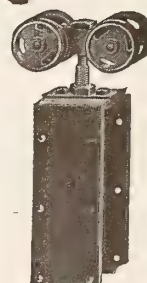
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Factory Transportation



BULLDOG STEEL
JOIST HANGERS
They never let go!
Stronger than
malleable

"R-W" HANGERS
and Carrier Systems
are specified by lead-
ing architects and
engineers throughout
Canada and the United
States. Catalogues and
estimates will be
cheerfully furnished.

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CANADIAN COMPANY, LTD.
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Trolleys
are best for
all sliding
doors



We manufacture Babbitt Metal for every purpose.

Our XXX Genuine Arctic

is especially adapted for

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HAMILTON, ONT.

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Shapes, Bronze
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experience and know-
ledge of the metal will be
of value to you.

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NORTHERN ALUMINUM CO., LIMITED

**Made
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Canada**



**From
British
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LEATHER BELTING**

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BALATA BELTING**

Guaranteed to Give Satisfaction

D. K. McLAREN LIMITED

TORONTO MONTREAL ST. JOHN, N.B.
847 Beatty Street, VANCOUVER
Engineer's Supply Co., 123 Bannatyne Ave. E., WINNIPEG

Guelph.

Arrangements have been made whereby the Dominion Fibre Company, of Doon, Ont., whose premises there were burned out about two months ago, will locate in Guelph, taking over the old Grundy stove foundry.

The Guelph Hosiery Company has been established by J. A. Paul, on Wyndham Street, manufacturing men's worsted hosiery.

Contract has been let for the erection of an addition to the mills of the Dominion Linens, Limited. The estimated cost is \$10,000.

Hamilton.

The project for the construction of a coke oven plant for the Hamilton By-Products Coke Ovens, Limited, Sun Life Building, has been deferred until next year.

Plans for a \$150,000 office building are being prepared for the Canadian Westinghouse Co., Sanford Avenue North.

Contract for the erection of an addition to the premises of the Frost Wire Fence Company, Sherman Avenue, has been awarded at an estimated cost of \$4,000.

Contract for the erection of a factory for the Dominion Steel Castings, Depew Street, has been let. Estimated cost, \$75,000.

Contracts have been let and work has been started on the erection of a storeroom for Brown Boggs Company, King William Street.

633-661
EASTERN
AVENUE



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2**

**The Largest Patent Leather Manufacturers
in the British Empire**

A. R. CLARKE & CO., LIMITED

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TORONTO

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Cut of 60-inch "Extra" Double Belt

Made by The J. C. McLaren Belting Co., Limited.

WE ARE HEADQUARTERS FOR
ALL KINDS OF

BELTING
LACE LEATHER
CARD CLOTHING
REEDS AND
GENERAL
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ABSOLUTE SATISFACTION GUARANTEED

The J. C. McLaren Belting Co., Limited

ESTABLISHED 1856

Head Office and Factory
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Branches:

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LEATHER BELTING

Made in Canada

J. L. Goodhue & Co., Limited

DANVILLE, QUEBEC

Manufacturers of
SUPERIOR QUALITY LEATHER
BELTING AND LACE LEATHER

QUALITY

Not Price Our Aim

Canadian Manufacturers SHOULD
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BISSETT & WEBB, Limited
151 Notre Dame Ave. East
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Vancouver Agents:
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ESTABLISHED 1850.

DID YOU EVER NOTICE

that jarring, grinding noise in your machine
shop caused by the metal gears?

Wouldn't you like to stop
that noise? You can do it
by using

**NEW PROCESS GEARS
RAWHIDE PINIONS**

They last indefinitely too.

Ask us about it.

R. GARDNER & SON, LIMITED

Hazareth, Brennan and Dalhousie Streets
MONTREAL

Economy and Accuracy IN SCREW THREAD GAGING

The upper contact points are set to the maximum size—the lower to the minimum. Lay the screw between the upper points and let it "find its own level." Can anything be simpler?



JUST RIGHT

Varying judgment of individual workmen is entirely eliminated by the use of

WELLS LIMIT GAGES

Send us an outline of your requirements. We will plan the gages for your output.

Wells Bros. Company of Canada, Limited

GALT - ONTARIO

Manufacturers of the celebrated *Little Giant* line of
TAPS, DIES and SCREW PLATES, GAGES AND REAMERS

The Hamilton Steel Wheel Company has purchased a site and will erect a plant, costing \$200,000, for making steel wheels, which product was formerly furnished by Germany and the United States. This industry will give employment to about two hundred men and will turn out about seventy-five tons of steel wheels per day. C. W. Sherman of the Dominion Steel Foundry Company will be managing-director of the new concern.

The contract for glass and roofing has been let in connection with the storage building now in course of erection for the Chipman & Holton Knitting Company, Limited. Tenders on painting, heating, plumbing and electrical work will be called later.

Hanover.

The rotary building of the Hanover Cement Company was recently damaged by fire with a loss of \$7,000.

Harriston.

The Harriston Casket Company has decided to rebuild its plant which was recently destroyed by fire.

Kitchener.

All work required in the erection of a machine shop extension for the Canadian Buffalo Forge Company will be done by the general contractor.

The Berlin Rubber Manufacturing Company have changed the name of the concern to that of the Kitchener Rubber Manufacturing Company.

Twist Drills

Reamers

We are in a position to give reasonably good deliveries on High Speed Tools if ordered promptly.

SET SCREWS

CAP SCREWS

ENGINE STUDS

NUTS of Every Variety of Finish

John Morrow Screw & Nut Co., Limited

INGERSOLL - ONTARIO

SINCE 1896

The Canadian Northern Railway has become a great national institution in Canada, serving :—

GRAIN

Collecting elevators having 26% of the total capacity of Western Canada are served by the Canadian Northern Railway; licensed elevators having 47% of the total capacity in Canada are on the Canadian Northern Railway line.

FLOUR

Flour Mills having 51% of the total daily capacity in Canada are on lines of the Canadian Northern Railway. In British Columbia, the C.N.R. proportion is 90%; in Alberta 44%; in Saskatchewan 74%; in Manitoba 81%; in Ontario 34%; in Quebec 90%; in Nova Scotia 15%. At Duluth, which is considered separately, the daily capacity is 5,500 barrels per day.

LUMBER

Lumber mills producing 30% of the output in Canada are served by the Canadian Northern Railway, while 32% of the total is marketed by water. In British Columbia the Canadian Northern proportion is 34%; in Alberta, Saskatchewan and Manitoba 70%; in Ontario 33%; in Quebec 28%; in Nova Scotia 28%.

PULP AND PAPER


Pulp and Paper Plants having 53% of the capacity of Canada are served by Canadian Northern Railway lines. In Ontario the Canadian Northern proportion is 60%; in Quebec 64%; and in Nova Scotia 50%.



TEST CANADIAN NORTHERN SERVICE

It should be of particular interest to manufacturers to remember, that while the Canadian Northern Railway opened vast areas to settlement, it also sought successfully for the immigrants to people in part the lands so made available. The lines to that great market from the centres of Ontario and Quebec, and from Victoria to Vancouver are now in operation. It will be well worth while to test the service.

Principal Offices at: Halifax, N.S.; Quebec, Que.; Montreal, Que.; Ottawa, Ont.; Toronto, Ont.; Port Arthur, Ont.; Winnipeg, Man.; Regina, Sask.; Saskatoon, Sask.; Prince Albert, Sask.; Edmonton, Alberta; Calgary, Alberta; Kamloops, B.C.; New Westminster, B.C.; Vancouver, B.C.; Victoria, B.C.



Ship
CANADIAN NORTHERN
all the way

Canada-South Africa Direct Service

Regular monthly sailings from Montreal in Summer and St. John, N.B., in Winter, calling at Cape Town, Algoa Bay (Port Elizabeth), East London, Port Natal (Durban) and Delagoa Bay in the order named.

Sailings 20th of each month.

All steamers fitted with refrigerators for the carriage of perishable freight.

For rates of freight and other information apply to

ELDER DEMPSTER & CO., Limited

133 BOARD OF TRADE BUILDING - - MONTREAL

Toronto Agent: S. J. SHARP, 79 Yonge St., Royal Bank Bldg

THE New Zealand Shipping Company, Limited CANADA TO Australia and New Zealand

Regular monthly sailings from Montreal in summer and St. John in winter, calling at Adelaide, Melbourne and Sydney (Australia), and Auckland, Wellington, Lyttelton and Dunedin (New Zealand). Sailings 20th of each month.

Through bills of lading issued to all points in Australia, New Zealand, Tasmania and other islands of Oceania.

Marine Insurance effected at rates equal to those given from New York.

For rates and other information apply to

**The New Zealand Shipping Co.
LIMITED**

213 Board of Trade Building, Montreal

The Canadian Buffalo Forge Company has started work on an addition, 150 feet by 100 feet, that will double their capacity. The improvements will cost over \$100,000. It is expected the building will be completed by December 1st.

London.

Thirty thousand dollars' damage was caused by fire on October 19th at the plant of the W. A. Jenkins Mfg. Company, the loss being fully covered by insurance.

The general contract has been let for the erection of a galvanizing plant for the McClary Manufacturing Company. Prices on felt and gravel roofing are being received by the general contractor. The approximate cost is \$30,000.

S. F. Lawrason & Company, Nelson and Adelaide streets, are about to build an addition of brick construction to their factory by day labor, at an estimated cost of \$3,500.

Merrickville.

The Percival Plow and Stove Company will erect a new storage building.

Merritton.

The general contract for the erection of an addition to the plant of the Lincoln Paper Mills has been awarded. Approximate cost is \$200,000.

Mimico.

The Dominion Wheel Co., Limited, New Toronto, intend to erect a building here costing approximately \$5,000.

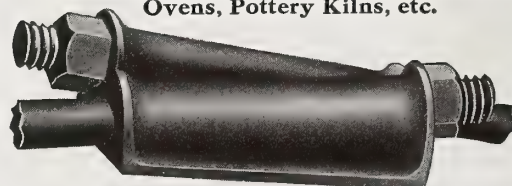
EXPORTERS OF
Reed Organs, Piano Stools,
Music Cabinets.
Catalogue B.

The Goderich Organ Co. Limited
GODERICH, CANADA

Closet Seats,
Flush Tanks,
Medicine Cabinets,
Everything for the Bath Room.
Write for Catalogue C. and Price List.

LUGS FOR BANDS

On Silos, Tanks, Water Pipes, Penstocks
Ovens, Pottery Kilns, etc.



Ask
for
Price
List

For round Rods $\frac{3}{8}$ to $1\frac{1}{2}$ inch

Flat Bands 2 to 6 inches wide

Best Malleable Iron—Prompt Shipments.

OTTERVILLE MFG. CO., LIMITED
OTTERVILLE, ONT.



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The Finest Hunting
Grounds in America

ARE CONVENIENTLY REACHED VIA

CANADIAN PACIFIC

Particulars from Canadian Pacific Agents or
W. B. HOWARD, District Passenger Agent, Toronto.

Hear Us For Our Cause!



We want
to equip your
plant with
**Esty
Fire
Sprinklers**
and show you
how to reduce
insurance
costs 50% to
80%.

IT'S A GREAT BIG MONEY SAVER.

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H. G. VOGEL CO. CANADA LIMITED
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PURDY, MANSELL LIMITED TORONTO

Cut your Insurance in half by having us
instal an

Automatic Fire Sprinkler System

throughout your Factory, Store or Ware-
house.

The Original



The Best

Write us for Estimates

Correspondence Solicited

Mount Dennis.

Contract has been awarded for the erection of factory No. 2 for the Canadian Kodak Company, Kodak Heights, at an estimated cost of \$12,000.

New Toronto.

Buildings are now being erected for the Dupont Fabrikoid Company, Dufferin Street, and the work is being done under the supervision of the chief engineer, F. W. Curtis, Goodyear Building, Toronto. Estimated cost of buildings, \$75,000; estimated cost of machinery, \$175,000.

Tenders are being received on the erection of a concrete building for Brown's Copper and Brass Rolling Mills, Limited. The estimated cost is \$50,000.

Niagara Falls.

The Perfection Tire Company are ready to go ahead with the erection of their factory. Satisfactory arrangements will be made to give the company power concessions promised by the municipality without violating Hydro rates or selling power below the price determined by the Commission.

The Canadian Aloxite Co. have commenced the erection of an addition to their plant at Montrose, Ont.

Plans are being prepared for a factory of reinforced concrete construction for Nesbitt Billings & Company, at an estimated cost of \$15,000.

Orillia.

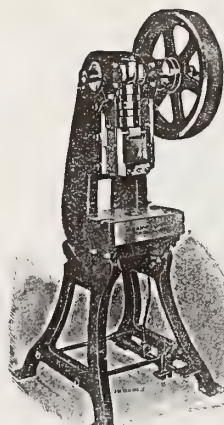
Mowry & Sons, Limited, have sold out to the E. Long Manufacturing Company.

DARLINGS STEAM APPLIANCES

DARLING BROTHERS
LIMITED
Engineers and Manufacturers
MONTREAL, CANADA

Branches:
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POWER PRESSES DROP AND SCREW

SHEET METAL
STAMPINGS
DIES AND TOOLS

W. H. Banfield & Sons

370-384 Pape Ave. Toronto

FIRE PROTECTION



Points worth considering—

That you can reduce your Insurance Rates 40-70 per cent.

That you can provide yourself with a safeguard against a fire spreading.

With an installation of

Manufacturers' Automatic Sprinklers which will pay for themselves in from two to five years. Systems installed by

The General Fire Equipment Co., Limited
72 QUEEN ST. EAST, TORONTO, CANADA

Goold, Shapley & Muir Co.

LIMITED

BRANTFORD : WINNIPEG : REGINA : CALGARY

MANUFACTURERS OF

GAS AND GASOLINE ENGINES

TANKS

AND

TOWERS

FOR

Sprinkler Systems

TOWN WATER SUPPLY

ETC., ETC

PUMPS

CONCRETE MIXERS

HOISTS, Etc.

Write, if interested



SPRINKLER TANKS and TOWERS

also wood and steel tanks for Municipal, Railway and Suburban water supply.

All our tanks and towers are built to pass inspection of any Board of Fire Underwriters.

Send for special tank and tower catalogue.

GALVANIZING HOT AND ELECTRIC

We do all kinds of hot and electro galvanizing for the trade. Our plant is one of the largest in Canada and our charges reasonable.

Write us for quotations on your galvanizing work.

Ontario Wind Engine & Pump Co., Limited

TORONTO MONTREAL WINNIPEG CALGARY



Canadian
CHICAGO BRIDGE & IRON COMPANY
Limited
Bridgeburg, Ontario

ELEVATED STEEL TANKS AND STANDPIPES
For Municipal, Railroad and Factory Service

We also build Oil Tanks, Coaling Stations, Bridges, Turntables, Buildings and Structural Material. Write our nearest sales office to-day for prices, plans and specifications. Our catalogue No. 25 gladly mailed to you, upon request.

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ALFRED WRIGHT, Manager, 8 Richmond St. E.



A Great Canadian Industry

Operating 12 Mills

Employing 10,000 People

*Producing Practically
Everything in Cotton*

DOMINION TEXTILE CO., Limited

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Montmorency Falls, Que.

Hochelaga, Que.

Kingston, Ont. ; Halifax, N.S.
Windsor, N.S. ; Moncton, N.B.

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All lines of White and Grey Cottons, Prints, Sheetings, Shirtings, Pillow Cottons, Longcloths, Cambrics, Ducks, Bags, Twills, Drills, Quilts, Bureau Covers, Towels and Towelling, Yarns, Blankets, Rugs, Twines and many other lines used by manufacturers in rubber and other trades.

Oshawa.

The Oriental Textile Company, Limited, manufacturers of pile fabrics, is considering the installation of a small yarn spinning and doubling plant.

Ottawa.

The erection of a printing establishment is being considered by Rolla L. Crain, Spruce Street. Work may not start until the spring. The estimated cost is \$20,000.

The Haynes Motor Company, Albert Street, are considering the erection of a factory, at an approximate cost of \$40,000.

Owen Sound.

The Corbet Foundry and Machine Company have had a very busy season. Besides turning out machinery for the manufacture of munitions, they recently shipped seven steel bridges to points in Ontario.

Paris.

The general contract for the erection of a dining-room for Penman's Limited has been awarded at a cost of \$6,000.

Petrolea.

The plant of the Petrolea Wagon Works was damaged by fire on October 8th to the extent of about \$35,000.

Port Arthur.

By a vote of 1,200 to 40, the ratepayers ratified an agreement between the City and Annwell G. McIntyre, of Toronto and Montreal, by which the latter, representing interests which now have four pulp mills in Canada, will build another mill here. They plan a plant of 150 tons output per day in three units of fifty tons per day each, to which is to be added a paper mill.

COTTON & WOOL WASTE

PACKED AT OUR

**DOMINION WASTE FACTORY
TORONTO**

THE GUARANTEE WITH OUR

Washed Cotton Wipers

All wipers have been hand selected, hard and starchy parts and buttons, etc., removed, sleeves and other closed parts opened and subjected to a thorough washing, rendering absolutely sanitary.

Write us for prices on our brands

**SELECT WHITE MIXED COLORED
DARK COLORED**

SCYTHES & COMPANY, LIMITED
Manufacturers and Jobbers, Toronto, Montreal

WASHED COTTON WIPERS

Port Colborne.

In connection with the proposed plant of the International Nickel Company, 43 Exchange Place, New York, tentative prices are being received on generators and motors.

Port Hope.

Ratepayers of the town last month passed by a large majority a by-law granting certain exemptions of taxes to the Port Hope Sanitary Mfg. Co., the recently organized company that took over the plant of the Standard Ideal Sanitary Mfg. Company.

Renfrew.

The general contract for the erection of a foundry and machine shop for L. Imbleau & Sons has been let. Approximate cost, \$3,000.

Contract for the erection of an addition to the premises of the Renfrew Textile Co., Limited, has been let and work will start very shortly. The estimated cost is \$10,000.

St. Catharines.

It is understood that the Monarch Knitting Company, Limited, have decided to locate their hosiery department in the St. Catharines mill, the necessary inducements not being forthcoming from the Town of St. Thomas.

Plans for a foundry are being prepared for the St. Catharines Brass Works.

St. Thomas.

The Canadian Woodenware Products Company's plant, which was recently destroyed by fire, will probably be rebuilt.



FRED ARMSTRONG
General Manager, Port Hope Sanitary
Mfg. Co., Limited

—Photo by British and Colonial Press.

Toronto.

The boiler-room of the McAlpine Tobacco Company was recently destroyed by fire at a loss of \$5,000.

The factory of the E. H. Harcourt Company, Limited, 255 Wellington Street West, was damaged by fire recently.

Doon Twines

Limited

Doon, Ontario

MANUFACTURERS OF

*Plow Lines, Clothes
Lines, Jute Twines
of every description
Warehouse Twines
Light and Heavy
Wrapping Twines*

THE
MONTREAL COTTONS
LIMITED

MANUFACTURERS OF

WHITE VICTORIA
LAWNS

WHITE NAINSOOKS

and

DYED COTTONS

OF EVERY DESCRIPTION



By Royal Warrant

“Canadian Club” Whisky

Fully Ripened in Wood. Age Guaranteed by Government.

QUALITY UNEXCELLED

Distilled and Bottled by

HIRAM WALKER & SONS
LIMITED

Walkerville, Canada

LONDON

CHICAGO

NEW YORK

MEXICO CITY

VICTORIA, B.C.

WINNIPEG

Contract for masonry has been let in connection with the factory addition now being built for Charles Bush, Limited.

A building permit has been issued to the Canada Metal Company for the construction of a factory extension on Fraser Avenue, to cost \$20,000. Work on the foundation has already started.

Tenders are now being received for the erection of a factory addition, of brick construction, for Benjamin Moore, 6 Lloyd Avenue. Estimated cost, \$3,500.

The plans of the proposed bakery for the Harry Webb Company, Limited, 23 Buchanan Street, are being revised and new tenders will be called shortly.

The Benedict Company, manufacturers of silver-plated ware, of Syracuse, N.Y., are fitting up the factory lately occupied by Lloyd & Sons and will manufacture here for their Canadian trade.

Windsor.

The Canadian Fairbanks-Morse Company have opened a branch sales office here in order to take care of their business in Western Ontario. J. N. Charles will be in charge of the office.

Engineering plans for preliminary construction of the steel plant at Ojibway are nearing completion, although it is unlikely any actual building of mills will be started before next spring.

QUEBEC.

Danville.

The Danville Chair & Specialty Company's factory was recently destroyed by fire, the loss being estimated at \$8,000

Montreal.

Fire at the Gagnon Company's factory recently did damage to the extent of \$200,000.

The Smardon Shoe Company will build a factory here.

The general contract for the erection of a factory for Thomas Davidson & Sons, Limited, Delisle Street, has been let at an approximate cost of \$5,000.

Quebec.

The general contract for the erection of an addition to the premises of the National Breweries has been let at an approximate cost of \$6,000.

SASKATCHEWAN.

Moose Jaw.

The capital of the Saskatchewan Clay Products Company has been raised from \$300,000 to \$500,000 in order that the company can carry out a broader plan of operation. The plant will be doubled in capacity and a gas producer installed for the burning of brick. An issue of \$10,000 of the stock will shortly be thrown open to the public. The name of the new company operating under Dominion charter, will be The Dominion Fire Brick and Clay Products Company, Limited. The company have on foot a scheme for forming a small colony of Belgian clay workers. This company have millions of tons of fire clay on their property suitable for the making of all the most useful forms of pottery. Their idea is to gather men who will establish themselves as pottery makers, paying the company a small royalty for the clay used, the price of which will be fixed and settled before the Belgians are asked to emigrate.

McClary's

Specialists in

HOTEL AND INSTITUTION KITCHEN APPLIANCES

and Manufacturers of the "FAMOUS" line of Goods including

Coal and Wood
FURNACES

Electric, Gas, Coal and Wood
STEEL AND CAST RANGES

Coal, Gas, Wood and Oil
HEATERS

ENAMELWARE, TINWARE AND OTHER KITCHEN WARE

LONDON
MONTREAL
VANCOUVER

TORONTO
WINNIPEG

McClary's

ST. JOHN, N.B.
CALGARY
EDMONTON

HAMILTON
SASKATOON

BUYERS' GUIDE TO CANADIAN MANUFACTURES

A List of Articles Which Will Enable the Purchaser to Know the Manufacturers of Made-in-Canada Goods. For Rates for Insertion in this Department Write to the Advertising Manager of Industrial Canada, Toronto.

ABRASIVE MATERIALS

- *Canadian Hart Wheels, Ltd., Hamilton, Ont.
- *Dominion Abrasive Wheel Co., New Toronto, Ont.

ACCOUNT BOOKS

- *The Brown Bros., Ltd., Toronto.

ACETYLENE GAS BURNERS

- Economiq Acetylene Burner Co., Toronto.

ACIDS

- *The Grasselli Chemical Co., Ltd., Toronto.
- *The Nichols Chemical Co., Ltd., Montreal.

ADVERTISING NOVELTIES

- Lawson & Jones, Ltd., London, Ont.

AERATED BEVERAGES

- Charles Gurd & Co., Ltd., Montreal, Que.
- J. J. McLaughlin, Ltd., Toronto.

AIR COMPRESSORS

- *Canadian Ingersoll-Rand Co., Sherbrooke, P.Q.
- *Jenckes Machine Co., Sherbrooke, P.Q.
- *Smart-Turner Machine Co., Ltd., Hamilton, Ont.

ALCOHOL

- The St. Hyacinthe Distillery Co. Ltd., St. Hyacinthe, Que.
- *Hiram Walker & Sons, Limited, Walkerville, Ont.

ALE

- E. L. Drewry, Winnipeg, Man.

ALUMINUM

- *Northern Aluminum Co., Ltd., 1305 Traders Bank, Toronto.

ALUMINUM CASTINGS

- *Tallman Brass & Metal Co., Hamilton, Ont.

AMMONIA

- Canadian Ammonia Co., Ltd., Toronto.

ANGLE BARS

- *The Steel Company of Canada, Limited, Hamilton, Ont.

ASBESTOS:

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS SHEATHING:

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS SHEET AND PISTON PACKINGS

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS STEAM PIPE AND BOILER COVERINGS

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS TEXTILES:

- *Eureka Mineral Wool & Asbestos Co., Toronto.

AUTOMOBILE ACCESSORIES,

- *Northern Electric Co., Limited, Montreal.
- *Tallman Brass & Metal Co., Hamilton, Ont.

AUTOMOBILE PARTS

- *Dominion Forge & Stamping Co., Walkerville, Ont.

AWNING CORD (cotton)

- Hamilton Cotton Co., Hamilton, Ont.

AXLES

- Canada Forge Co., Ltd., Welland, Ont.
- Guelph Spring & Axle Co., Ltd., Guelph, Ont.

AXLES, carriage and automobile

- Guelph Spring & Axle Co., Ltd., Guelph, Ont.

BABBITT METAL

- Alonzo W. Spooner, Limited, Port Hope, Ont.
- *The Canada Metal Co., Toronto.
- *Tallman Brass & Metal Co., Hamilton, Ont.

BACON

- E. W. Fearman Co., Ltd., Hamilton, Ont.

BAGS

- *Scythes & Co., Ltd., Toronto.

BAGS, Cotton

- The Canadian Bag Co., Ltd., Montreal, Que.

BAGS, jute

- The Canadian Bag Co., Ltd., Montreal, Que.
- *Scythes & Co., Ltd., Toronto.

BAGS, travelling

- J. Eveleigh & Co., Ltd., Montreal, Que.
- Lamontagne, Ltd., Montreal, Que.
- The M. Langmuir Mfg. Co., of Toronto, Ltd., Toronto.

BAKING JAPAN

- *Berry Bros., Ltd., Winnipeg, Man.

BAND RESAWS:

- *P. B. Yates Machine Co., Ltd., Hamilton, Ont.

BANK AND OFFICE RAILINGS

- *The Geo. B. Meadows, Toronto, Wire, Iron & Brass Works Co., Ltd., Toronto.
- *Canada Wire and Iron Works, Hamilton, Ont.

BANK FITTINGS

- The Canadian Office & School Furniture Co., Ltd., Preston, Ont.

BANK RAILINGS and CAGES

- *Canada Wire and Iron Goods Co., Hamilton, Ont.
- *Dennis Wire & Iron Works Co., London.

BANK SIGNS AND FITTINGS

- *Tallman Brass & Metal Co., Hamilton, Ont.

BARRELS, steel, and containers

- *Smart-Turner Machine Co., Ltd., Hamilton, Ont.

BARS, iron

- London Rolling Mill Co., Limited, London, Ont.

BARS, steel

- London Rolling Mill Co., Limited, London, Ont.

BASEBALL GOODS

- A. J. Reach Co., Brantford, Ont.

BATHS, enamelled

- Amherst Foundry Co., Ltd., Amherst, N.S.

BATTERIES, dry

- The Canadian National Carbon Co., Ltd., Toronto.
- Canadian Carbon Company, Ltd., Toronto.

BEARINGS

- *The Chapman Double Ball Bearing Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BEARINGS, bronze

- *Tallman Brass & Metal Co., Hamilton, Ont.

BEARINGS, pillow block and upright

- *Dodge Mfg. Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BEARINGS

- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BEDS, camp folding

- *Otterville Mfg. Co., Ltd., Otterville, Ont.

BEEF

- E. W. Fearman Co., Ltd., Hamilton, Ont.

BEER

- E. L. Drewry, Winnipeg, Man.

BELTING, chain conveyors

- *Canadian Link Belt Co., Toronto.

BELTING, chains

- *Dodge Mfg. Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BELTING, Elevator

- *Canadian Consolidated Rubber Co., Ltd., Montreal, Que.

BELTING, leather

- The Beardmore Belting Co., Ltd., Toronto.
- *J. L. Goodhue & Co., Danville, P.Q.
- *Sadler & Howarth, Montreal.
- *The D. K. McLaren Belting Co., Ltd., Montreal.
- *The J. C. McLaren Belting Co., Ltd., Montreal.

BELTING, rubber

- *Canadian Consolidated Rubber Co., Ltd., Montreal, Que.
- *Gutta Percha & Rubber, Limited, Toronto.

BENT GOODS

- The Crown Lumber Co., Woodstock, Ont.

BICYCLES AND ACCESSORIES

- *Canada Cycle and Motor Co., Ltd., Toronto.

BISCUITS

- The Montreal Biscuit Co., Montreal, Que.

BLACK SHEETS

- *A. C. Leslie & Co., Montreal.

BLANKETS

- Slingsby Mfg. Co., Ltd., Brantford, Ont.
- J. Walsham & Son, Ltd., Bolton, Ont.

BLANKETS, horse

- Slingsby Mfg. Co., Ltd., Brantford, Ont.
- J. Walsham & Son, Limited, Bolton, Ont.

BLASTING ACCESSORIES

- Canadian Explosives, Ltd., Montreal, Que.

BLEACHING POWDER

- Canadian Salt Co., Ltd., Windsor, Ont.

BLOWERS

- *Sheldons, Ltd., Galt, Ont.

BOATS OF ALL KINDS

- Peterboro Canoe Co., Ltd., Peterboro, Ont.

BOILER COMPOUND and OILS

- Electric Boiler Compound Co., Ltd., Guelph, Ont.

BOILER PRESERVATIVES

- *Beveridge Paper Co., Limited, Montreal, Que.

BOILERS

- *M. Beatty & Sons, Ltd., Welland, Ont.
- *Darling Bros., Montreal.
- *Goldie & McCulloch Co., Limited, Galt, Ont.
- John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.
- *Polson Iron Works, Ltd., Toronto.
- J. & R. Weir, Montreal, Que.
- Taylor-Forbes Co., Ltd., Guelph, Ont.
- *Jenckes Machine Co., Sherbrooke, Que.
- *The Watrous Engine Works Co., Ltd., Brantford.

BOILERS, hot water or steam.

- Steel & Radiation, Ltd., Toronto.
- Warden King, Ltd., Montreal, Que.

BOILERS, steam.

- *Jenckes Machine Co., Sherbrooke, Que.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.
- Steel and Radiation Ltd., Toronto.
- Warden King, Ltd., Montreal, Que.
- *The Watrous Engine Works Co., Ltd., Brantford, Ont.

BOILERS, steam and brass work

- *The Watrous Engine Works Co., Ltd., Brantford, Ont.

BOILER STANDS

- Anthes Foundry Ltd., Toronto.

BOLSTERS

- *Canadian Car & Foundry Co., Ltd., Montreal, Que.

BOLTS

- *The National Acme Mfg Co., Montreal, Que.

BOLTS AND NUTS

- *The Canadian Tube & Iron Co., Ltd., Montreal, Que.
- *The Steel Company of Canada, Limited, Hamilton, Ont.
- Starr Mfg. Co., Ltd., Dartmouth, N.S.

BOOKBINDERS

- R. G. McLean, Toronto.
- *The Brown Bros., Ltd., Toronto.

BOOKCASES

- *Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

BOOKCASES, sectional (Gunn)

- The George McLagan Furniture Co., Ltd., Stratford, Ont.

BOOKLETS

- Stone Limited, Toronto.
- R. G. McLean, Toronto.

BOOKS, blank

- *The Brown Bros., Ltd., Toronto.

BOOTS AND SHOES

- Ames-Holden-McCreedy, Ltd., Montreal, Que.
- J. Leckie Co., Ltd.
- The John Ritchie Co., Ltd., Quebec, Que.

BOXES, cellular board:

- *The Thompson & Norris Co. of Canada, Ltd., Niagara Falls.

BOXES, rattle and soap

- The Arlington Co. of Canada, Ltd., Toronto.

BOXES AND SHOOKS, wooden

- The C. Beck Mfg. Co., Ltd., Penetanguishene, Ont.

BOXES, wooden

- G. & J. Esplen, Montreal, Que.
- Barchard & Co., Ltd., Toronto.

BRAIDS AND TRIMMINGS

- The Moulton Mfg. Co., Limited, Montreal.

BRAKE SHOES

- *Canadian Hart Wheels, Limited, Hamilton, Ont.

BRANDS, burning

- Pritchard, Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

BRASS BOLTS AND NUTS

- *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS, BRONZE and ALUMINUM LETTERS

- *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS ENGRAVERS

- Pritchard, Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

BRASS FOUNDERS AND FINISHERS

- *The Booth-Coulter Copper & Brass Co., Ltd., Toronto.
- *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS GOODS

*The Booth-Coulter Copper & Brass Co., Ltd., Toronto.
 *Mueller Mfg. Co., Sarnia.
 The Garth Co., Montreal, Que.
 The James Morrison Brass Mfg. Co., Ltd., Toronto.
 *The Kerr Engine Co., Ltd., Walkerville, Ont.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS PLATES

Geo. Booth & Son., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS RODS, SHEETS AND PLATES

*Brown's Copper and Brass Rolling Mills, Ltd., New Toronto.

BRASS SIGNS AND MEMORIALS

*Tallman Brass & Metal Co., Hamilton, Ont.

BRASS TUBING, seamless

Canadian Seamless Wire Co., Ltd., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS WIRE

Canadian Seamless Wire Co., Ltd., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS WORK, church

Pritchard, Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

BRASS WORK, special

Bawden Machine Co., Ltd., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.
 *Booth-Coulter Copper & Brass Co., Ltd., Toronto.
 *The Waterson Engine Works Co., Ltd., Brantford, Ont.

BRICK

National Brick Co. of Laprairie, Laprairie, P.Q.
 Port Credit Brick Co., Port Credit, Ont.

BRICK, enamel

National Brick Co. of Laprairie, Laprairie, P.Q.

BRICK, pressed

National Brick Co. of Laprairie, Laprairie, P.Q.

BRICK, rubbing

*Canadian Hart Wheels, Limited, Hamilton, Ont.

BRICK, sewer

National Brick Co. of Laprairie, Laprairie, P.Q.

BRIDGES, Railway and Highway

*Dominion Bridge Co., Montreal.
 *Hamilton Bridge Works Co., Ltd., Walkerville, Ont.
 *The Canadian Bridge Co., Ltd., Hamilton, Ont.
 *The Structural Steel Co., Limited, Montreal, Que.

BROOMS

Simms, T. S., & Co., Limited, St. John, N.B.
 Stevens-Hepner Co., Limited, Port Elgin, Ont.

BRUSHES

Simms, T. S., & Co., Limited, St. John, N.B.
 Stevens-Hepner Co., Limited, Port Elgin, Ont.

BRUSHES, carbon

Canadian National Carbon Co., Ltd., Toronto.

BUCKET TANKS

*The General Fire Equipment Co., Limited, Toronto, Ont.

BUCKLES, shoe and coat

Parmenter & Bulloch Co., Limited, Gananoque, Ont.

BUILDING

Bathurst Lumber Co. Ltd., Bathurst, N.B.

BUILDING BLOCKS, vitrified, salt glazed

Standard Clay Products, Ltd., St. Johns, Que.

BUILDING FELT and PAPER

*Eureka Mineral Wool & Asbestos Co., Toronto.
 *Paterson Manufacturing Company, Toronto and Montreal.

BUILDERS, ship

*Polson Iron Works, Limited, Toronto.
 J. & R. Weir, Montreal, Que.

BURLAPS

The Canadian Bag Co., Limited, Montreal, Que.
 *Scythes & Co., Ltd., Toronto.

BURLAPS, decorative

Dominion Oil Cloth Co., Limited, Montreal, Que.

CABLE, Copper and galvanized

*The Steel Co. of Canada, Ltd., Hamilton, Ont.

CABLES, transmission and telephones

*Eugene F. Phillips Electrical Works, Ltd., Montreal, Que.

CABLES, Transmission and Cable

*Northern Electric Co., Limited, Montreal, Que.

CABLES, wire

The Dominion Wire Rope Co., Ltd., Montreal, Que.
 *The B. Greening Wire Co., Ltd., Hamilton, Ont.

CALENDARS, ADVERTISING

NOVELTIES, etc.
 Rolph & Clark, Limited, Toronto.
 Lawson & Jones, Limited, London, Ont.
 Stone Limited, Toronto.

CAMERAS

Canadian Kodak Co., Limited, Toronto.

CAMPERS' OUTFITTERS

Slingsby Mfg. Co., Ltd., Brantford, Ont.

CANOEES

Peterboro Canoe Co., Ltd., Peterboro, Ont.

CANS, baking powder, etc.

American Can Co., Montreal and Hamilton.
 A. R. Whittall, Montreal, Que.

CANS, fruit

American Can Co., Montreal and Hamilton.
 A. R. Whittall, Montreal, Que.

CANS, tin

A. R. Whittall, Montreal, Que.
 American Can Co., Montreal and Hamilton.

CANS, iron, lead and putty

A. R. Whittall, Montreal, Que.

CANVAS

*Scythes & Co., Ltd., Toronto.

CAPS, cloth

John W. Peck & Co., Ltd., Montreal, Que.

CARBIDE

*Canada Carbide Co., Ltd., Montreal, Que.

CARBON BRUSHES

Canadian Carbon Co., Limited, Toronto.

CARBON PRODUCTS

Canadian Carbon Co., Limited, Toronto.

CARBONS, arc light

Canadian Carbon Co., Limited, Toronto.
 The Canadian National Carbon Co., Ltd.

CARBONS, flame

Canadian Carbon Co., Limited, Toronto.

CARBONIC ACID GAS

Canadian Carbonate Company, Ltd., Montreal, Que.

CARBIDE OF CALCIUM

*Canada Carbide Co., Ltd., Montreal, Que.
 *Union Carbide Co., Welland, Ont.

CARDBOARD

Bathurst Lumber Co., Ltd., Bathurst, N.B.

CARD RECORD SYSTEMS

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

CARPETS AND RUGS

Toronto Carpet Mfg. Co., Limited, Toronto.

CARPETS AND RUGS, Axminster and ingrain

Toronto Carpet Mfg. Co., Limited, Toronto.

CARPETS AND RUGS, Brussels and Wilton

Toronto Carpet Mfg. Co., Limited, Toronto.

CARPET YARNS, worsted and wool

Toronto Carpet Mfg. Co., Limited, Toronto.

CARRIAGES, baby, etc.

Canada Furniture Manufacturers, Ltd., Woodstock, Ont.

CARRIERS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

CARRIERS, box and barrel

*Canadian Mathews Gravity Carrier Co., Limited, Toronto.

CARRIERS, brick

*Canadian Mathews Gravity Carrier Co., Limited, Toronto.
 *Richards-Wilcox Canadian Co., Ltd., London, Ont.

CARS

*Canadian Car & Foundry Co., Ltd., Montreal, Que.
 *National Steel Car Co., Limited, Hamilton, Ont.

CARS, industrial

*Sheldons, Ltd., Galt.

CARTONS, lithographed

Harris Lithographing Co., Toronto.

CASTINGS

*Tallman Brass & Metal Co., Hamilton, Ont.

CASTINGS, aluminum

*Booth-Coulter Copper & Brass Co., Limited, Toronto.

CASTINGS, brass

*Tallman Brass & Metal Co., Hamilton, Ont.
 *Booth-Coulter Copper & Brass Co., Limited, Toronto.

CASTINGS, brass and bronze

*Tallman Brass & Metal Co., Hamilton, Ont.

CASTINGS, grey iron

*Dodge Mfg. Co., Toronto.
 *Canadian Car & Foundry Co., Ltd., Montreal, Que.
 *The Goldie & McCulloch Co., Ltd., Galt, Ont.
 *Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.
 John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.

CASTINGS, malleable iron

*Galt Malleable Iron Co., Ltd., Galt, Ont.
 *Pratt & Letchworth Co., Brantford, Ont.

CASTINGS, steel

*Canadian Steel Foundries, Ltd., Montreal, Que.
 *Dominion Steel Foundry Co., Ltd., Hamilton, Ont.
 *Hull Iron and Steel Foundry, Ltd., Hull, P.Q.
 *Joliette Steel Co., Ltd., Montreal.
 *Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.

CATALOGUE MAKERS

Grip, Ltd., Toronto.
 R. G. McLean, Toronto.

CAUSTIC SODA

Canadian Salt Co., Ltd., Windsor, Ont.

CELLBOARD

Adams Cellboard Co., Toronto, Ont.

CEMENT GUNS

Steel and Radiation, Ltd., Toronto.

CHAIN, silent drive

*Canadian Link Belt Co., Toronto.

CHAIRS

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

CHAIRS, assembly hall

Stratford Mfg. Co., Ltd., Stratford, Ont.

CHAIRS, folding

Stratford Mfg. Co., Ltd., Stratford, Ont.

CHAIRS, rattan and upholstered

Imperial Rattan Co., Ltd., Stratford, Ont.

CHEMICALS

*The Grasselli Chemical Co., Ltd., Toronto.
 *The Nichols Chemical Co., Ltd., Montreal, Que.

CHEMICAL LABORATORY

APPARATUS
 The Geo. M. Hendry Co., Limited, Toronto.

CHICLETS AND CHEWING GUM

Canadian Chewing Gum Co., Ltd., Toronto.

CIGARS

Ed. Youngheart & Co., Limited, Montreal, Que.

CIGARETTES AND TOBACCO

Philip Morris & Co., Limited, Montreal, Que.

CIRCULAR CUTTERS, solid steel

The Peter Hay Knife Co., Limited, Galt, Ont.

CLAM SHELL BUCKETS

*M. Beatty & Sons, Ltd., Welland, Ont.

CLOCKS, TIME

*International Time Recording Co. of Canada, Ltd., Toronto.

CLOCKS, WATCHMEN'S

*The General Fire Equipment Co., Limited, Toronto.

CLOSET SEATS

*Goderich Organ Co., Goderich, Ont.

CLOTHING

John W. Peck & Co., Ltd., Montreal, Que.
 Mackenzie & Co., Ottawa, Ont.

CLOTHING, leather and sheepskin lined coats

*A. R. Clarke & Co., Ltd., Toronto.

CLOTHING, Mackinaw

The Carss Mackinaw Clothing Co., Ltd., Orillia, Ont.

CLOTHES LINES, cotton

Hamilton Cotton Co., Hamilton, Ont.

CLUTCHES

*Dodge Mfg. Co., Ltd., Toronto.

CLUTCHES, conveyors

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

COAL

*Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N.S.
 Standard Fuel Co., Toronto.

COBALT OXIDE

The Contagas Reduction Co., Ltd., St. Catharines, Ont.

COCOA AND CHOCOLATE PREPARATIONS

Walter Baker & Co., of Canada, Ltd., Montreal, Que.

COFFEE

S. H. Ewing & Sons, Montreal, Que.

COLD DRAWN SHAPES, flats, squares and hexagons

*The Canadian Drawn Steel Co., Ltd., Hamilton, Ont.
 *Union Drawn Steel Co., Limited, Hamilton, Ont.

COLD STORAGE DOORS

John Hillock & Co., Ltd., Toronto.

COLLAR BUTTONS

The Arlington Co. of Canada, Ltd., Toronto.

COLLARS

The Standard Shirt Co., Limited, Montreal, Que.

COLLARS, coated linen

Parsons & Parsons Canadian Co., Hamilton, Ont.

COLORES

Brandram-Henderson, Limited, Montreal, Que.
 A. Ramsay & Son Co., Montreal, Que.

COMBS, fine dressing and name

The Arlington Co. of Canada, Ltd., Toronto.

COMMERCIAL STATIONERS

Rolph & Clark, Ltd., Toronto.

COMMERCIAL STATIONERY

*Brown Bros., Ltd., Toronto.

CONCENTRATORS

*Jenckes Machine Co., Sherbrooke, Que.

CONCRETE COATINGS, paints, etc.
 The Imperial Varnish & Color Co., Limited, Toronto.

CONDUITS FOR INTERIOR WIRING

*Conduits Company, Ltd., Toronto.

CONFECTIONERY

Ganong Bros., Ltd., St. Stephens, N.B.
Moirs, Limited, Halifax, N.S.
The Montreal Biscuit Co., Montreal, Que.

CONTRACTORS' PLANT

*M. Beatty & Sons, Ltd., Welland, Ont.

CONVEYORS

*Canadian Mathews Gravity Carrier Co., Toronto.
*Dodge Mfg. Co., Ltd., Toronto.
*Jenckes Machine Co., Sherbrooke,

COPPER

*Eugene F. Phillips, Electrical Works, Limited, Montreal.
*Booth-Coulter Copper & Brass Co., Limited, Toronto.

COPPER SHEETS AND PLATES

*Booth-Coulter Copper & Brass Co., Limited, Toronto.
*Tallman Brass & Metal Co., Hamilton, Ont.

COPPERSMITHS

*Booth-Coulter Copper & Brass Co., Limited, Toronto.

COPPER TUBING, seamless

Canadian Seamless Wire Co., Ltd., Toronto.
*Booth-Coulter Copper & Brass Co., Limited, Toronto.

COPPER WIRE

Canadian Seamless Wire Co., Ltd., Toronto.

CORKS

S. H. Ewing & Sons, Montreal, Que.

CORK CARPET

Dominion Oil Cloth Co., Ltd., Montreal, Que.

CORRUGATED PAPER BOXES

Adams Cellboard Co., Toronto.
*Hinde & Dauch Paper Co., Toronto.
*Martin Corrugated Paper & Box Co., Limited, Toronto.
*The Thompson & Norris Co. of Canada, Ltd., Niagara Falls, Ont.

CORSETS

Dominion Corset Co., Quebec, Que.

COTTONS

*Dominion Textile Co., Limited, Montreal, Que.
*Montreal Cottons, Ltd., Valleyfield, P.Q.

COTTONADES

Hamilton Cotton Co., Hamilton, Ont.

COUPLERS

*Canadian Steel Foundries, Ltd., Welland, Ont.

CRANES

*Northern Crane Works, Walkerville, Ont.

CRANES, locomotive

*Canadian Link Belt Co., Toronto.

COUPLINGS

*Dodge Mfg. Co., Ltd., Toronto.

CRANKSHAFTS

Canada Forge Co., Ltd., Welland, Ont.

CREAM CHEESE, Ingersoll

The Ingersoll Packing Co., Limited, Ingersoll, Ont.

CREAM SEPARATORS AND MILK CLARIFIERS

De Laval Dairy Supply Co., Peterboro, Ont.

CREAMERY AND CHEESE FACTORY MACHINERY AND SUPPLIES

De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

CREOSOTED MATERIALS

*Paterson Mfg. Co., Toronto and Montreal.

CRUSHED STONE

The Hagersville Contracting Co., Limited, Hagersville, Ont.

CRUSHING ROLLS

*Jenckes Machine Co., Sherbrooke, Que.

CUPOLAS

*Sheldons, Ltd., Galt, Ont.
*Northern Crane Works, Limited, Walkerville, Ont.

CUPS, presentation
Standard Silver Co., Toronto.

CUPS, grease and oil
*The Canadian Winkley Co., Ltd., Windsor, Ont.

CURLED HAIR

*Delany and Pettit, Ltd., Toronto.

CURTAINS, chenille

Hamilton Cotton Co., Hamilton, Ont.

CUTLERY

Standard Silver Co., Toronto.

CUTTERS, (Machine)

*Pratt & Whitney Co., Dundas.

DENIMS

Hamilton Cotton Co., Hamilton, Ont.

DERAILS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

DESIGNERS

Ontario Engraving Co., Hamilton, Ont.

DESIGNERS AND PRINTERS OF BOOKLETS, ETC.

Grip, Ltd., Toronto.

DESKS

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

DINING ROOM SUITES

The George McLagan Furniture Co., Limited, Stratford, Ont.

DIES

*Butterfield & Co., Rock Island, P.Q.

*Pratt & Whitney Co., Dundas.

DISINFECTING APPARATUS

Spramotor Co., London, Ont.

DOOR HANGERS

*Richards Wilcox Canadian Co., Ltd., London, Ont.

DRAPERY AND UPHOLSTERY GOODS

Daly & Morin, Montreal, Que.

DREDGES

*M. Beatty & Sons, Limited, Welland, Ont.

DRESSING, belt,

Sadler & Haworth, Montreal, Que.

DRESS AND CLOAK TRIMMINGS

J. Henry Peters Co., 1 Mincing St., Toronto.

DRILLS

*John Morrow Screw & Nut Co., Limited, Ingersoll, Ont.

*Pratt & Whitney Co., Dundas.

DRILLS, rock

*Canadian Ingersoll Rand Co., Sherbrooke, Que.

*Jenckes Machine Co., Sherbrooke, Que.

DRIFT BOLTS OR SPIKES

London Rolling Mill Co., Limited, London, Ont.

DROP FORGINGS

*Canadian Billings & Spencer, Ltd., Welland, Ont.

DRUMS, steel, and containers

*Smart-Turner Machine Co., Ltd., Hamilton, Ont.

DRY CELLS, electric

Canadian Carbon Co., Limited, Toronto.

DRY COLORS

P. D. Dods & Co., Ltd., Montreal, Que.

The Imperial Varnish & Color Co., Limited, Toronto.

R. C. Jamieson & Co., Ltd., Montreal, Que.

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

DUMB WAITERS

Turnbull Elevator Mfg. Co., Toronto.

DURABLE WIRE ROPE

The Dominion Wire Rope Co., Ltd., Montreal, Que.

DYNAMITE

Canadian Explosives, Limited, Montreal, Que.

DYNAMOS

Consolidated Electric Co., Limited, Toronto.

*Jones & Moore Electric Co., Ltd., Toronto.

*The Canadian Crocker-Wheeler Co., Limited, St. Catharines, Ont.

DYNAMOS, plating

*Jones & Moore Electric Co., Ltd., Toronto.

EIDERDOWN

Galt Knitting Co., Ltd., Galt.

ELECTRIC APPLIANCES

*Canadian Crocker-Wheeler Co., Limited, St. Catharines, Ont.

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

ELECTRICAL COMPOUNDS

Standard Paint Co. of Canada, Ltd., Montreal, Que.

ELECTRICAL AND GAS FIXTURES

The Garth Co., Montreal, Que.

The James Morrison Brass Mfg. Co., Limited, Toronto.

*Tallman Brass and Metal Co., Hamilton, Ont.

ELECTRIC LAMPS

Packard Electric Co., Limited, Toronto.

ELECTRIC PLATE WARE

Roden Bros., Ltd., Toronto.

ELECTRIC BATTERIES

Canadian Carbon Co., Limited, Toronto.

ELECTROTYPING

Central Press Agency, Toronto.

ELECTRICAL SUPPLIES

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

*Jones & Moore Electric Co., Ltd., Toronto.

*Northern Electric Co., Limited, Montreal, Que.

ELECTRO-SILVER PLATED WARE

Standard Silver Co., Toronto.

ELEVATING MACHINERY

*Canadian Mathews Gravity Carrier Co., Toronto.

ELEVATORS

*Jenckes Machine Co., Sherbrooke, Que.

Turnbull Elevator Manufacturing Company, Toronto.

*The Watrous Engine Works Co., Ltd., Brantford, Ont.

*Northern Crane Works, Limited, Walkerville, Ont.

ELEVATORS FOR ALL PURPOSES

*The Watrous Engine Works Co., Limited, Brantford, Ont.

ELEVATOR GATES AND DOORS

Turnbull Elevator Mfg. Co., Ltd., Toronto.

ELEVATOR GUARDS

*The Geo. B. Meadows, Toronto

Iron and Brass Goods Works Co., Limited, Toronto.

*Canada Wire and Iron Works, Hamilton, Ont.

ELEVATORS, hydraulic and electric

John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.

EMERY DRESSERS AND STANDS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

EMERY GRINDERS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

EMERY WHEELS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

EMERY WHEEL GUARDS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

ENAMELS

R. C. Jamieson & Co., Limited, Montreal, Que.

ENAMEL MANUFACTURERS AND DECORATORS

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

ENAMEL AND TIN WARE

McClary Mfg. Co., London, Ont.

ENGINES

*E. Leonard & Sons, London, Ont.

*Goldie & McCulloch Co., Limited, Galt, Ont.

J. & R. Weir, Montreal, Que.

*Jenckes Machine Co., Sherbrooke, Que.

*Polson Iron Works, Limited, Toronto.

*Sheldons, Ltd., Galt, Ont.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

*Massey-Harris Co., Ltd., Toronto.

ENGINES, gas and gasoline

*Goold-Shapley-Muir Co., Limited, Brantford, Ont.

*Massey-Harris Co., Ltd., Toronto.

ENGINES, gasoline, tractor, plowing and threshing

*Sawyer-Massey Co., Ltd., Hamilton, Ont.

ENGINES, hoisting

*M. Beatty & Sons, Welland, Ont.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

ENGINES, steam plowing and threshing

Sawyer-Massey Co., Limited, Hamilton, Ont.

ENGRAVERS

Grip, Limited, Toronto.

Ontario Engraving Co., Hamilton, Ont.

Rolph & Clark, Limited, Toronto.

Stone, Limited, Toronto.

ENGRAVERS, half-tone
Grip, Limited, Toronto.

Ontario Engraving Co., Hamilton, Ont.

ENGRAVERS, wood
Ontario Engraving Co., Hamilton, Ont.

ENGRAVERS AND PRINTERS
steel plate
American Bank Note Co., Ottawa, Ont.

ENGRAVERS AND PRINTERS
banknote
American Bank Note Co., Ottawa, Ont.

ENGRAVING
*J. L. Jones Engraving Company, Toronto.

ENGRAVING, copper and steel
plate
Pritchard-Andrews Co. of Ottawa, Limited, Ottawa, Ont.

ENSLAGED AND STRAW CUTTERS
J. Fleury's Sons, Aurora, Ont.

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

ENVELOPES
Barber-Ellis Co., Ltd., Toronto.

Canada Envelope Co., Montreal, Que.

EXCELSIOR
*Delany & Pettit, Ltd., Toronto.

EXCELSIOR PADS
*Delany & Pettit, Ltd., Toronto.

Parmenter & Bulloch Co., Limited, Gananoque, Ont.

EXPERTS IN PATENT CAUSES
Ridout & Maybee, Toronto.

EXPLOSIVES, high
Canadian Explosives Ltd., Montreal, Que.

FACE PLATE JAWS
Ker & Goodwin, Brantford, Ont.

FACTORY SUPPLIES, cheese and creamery
De Laval Dairy Supply Co., Ltd., Montreal, Que.

J. Henry Peters Co., 1 Mincing St., Toronto.

FANS
*Sheldons, Limited, Galt, Ont.

FASTENERS, belt
*Sadler & Haworth, Montreal, Que.

FELTS, PULP AND PAPER MAKERS
Ayers Limited, Lachute Mills, P.Q.

FENCES AND GATES
*Dennis Wire & Iron Works Co., London, Ont.

*Canada Wire and Iron Works, Hamilton, Ont.

FENCING AND GATES, woven
wire
Banwell Hoxie Wire Fence Co., Hamilton, Ont.

*Canada Wire and Iron Goods Co., Hamilton, Ont.

FENCING, wire
C. H. Johnson & Sons, Limited, Montreal, Que.

FIBRE PAIRS
*The E. B. Eddy Co., Ltd., Hull, Que.

FILES
Henry Disston & Sons, Limited, Toronto.

*The Nicholson File Co., Port Hope, Ont.

FILING CABINETS
*Office Specialty Co., Newmarket, Ont.

FILING EQUIPMENT, wood & steel
*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

FILING SYSTEMS
*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

FIRE ALARMS
*Northern Electric Co., Limited, Montreal, Que.

FIRE DOOR HARDWARE
*Richards Wilcox Canadian Co., Limited, London, Ont.

FIRE DOORS
*A. B. Ormsby Co., Ltd., Toronto.

FIRE ENGINES
*The Watrous Engine Works Co., Limited, Brantford, Ont.

FIRE ESCAPES

- *Canada Wire and Iron Goods Co., Hamilton, Ont.
- *Dennis Wire & Iron Works Co., London, Ont.

FIRE EXTINGUISHERS

- *A. B. Ormsby Co., Ltd., Toronto.
- *Booth-Coulter Copper and Brass Co., Limited, Montreal, Que.
- *The General Fire Equipment Co., Limited, Toronto, Ont.

FIRE FIGHTING APPARATUS

- *The Watrous Engine Works Co., Limited, Brantford, Ont.

FIRE HOSE

- *Canadian Consolidated Rubber Co., of Canada, Limited, Montreal, Que.
- *Gutta Percha and Rubber, Ltd., Toronto.

FIRE PREVENTION MATERIAL

- *Chicago Bridge & Iron Works, Bridgeburg, Ont.
- *Eureka Mineral Wool & Asbestos Co., Toronto.
- *The General Fire Equipment Co., Limited, Toronto.

FIRE-PROOF WINDOWS AND DOORS

- *A. B. Ormsby Co., Ltd., Toronto.
- *Pedlar People, Ltd., Oshawa, Ont.

FIRE SPRINKLER SYSTEMS

- *Chicago Bridge & Iron Works, Bridgeburg, Ont.
- *The General Fire Equipment Co., Limited, Toronto.
- *Purdy Mansell Co., Toronto.
- *H. G. Vogel Co., Montreal, Que.

FIRE AND WATER DEPARTMENT SUPPLIES

- *Chicago Bridge & Iron Works, Bridgeburg, Ont.
- The Garth Co., Montreal, Que.

FISH, Atlantic Sea-Foods

- Maritime Fish Corporation Ltd., Montreal, Que.

FITTINGS FOR SOIL PIPE

- Anthes Foundry, Ltd., Toronto.

FITTINGS, steam

- Warden King, Ltd., Montreal, Que.

FLAGS

- *Scythes & Co., Limited, Toronto.

FLASHLIGHTS

- Canadian Carbon Co., Toronto.

FLOORING, hardwood

- Seaman Kent Co., Ltd., Meaford, Ont.

FLUE LINERS

- Standard Clay Products, Ltd., St. Johns, Que.

FORGES

- *Sheldons, Limited, Galt, Ont.

FORGINGS

- Canada Forge Co., Ltd., Welland, Ont.
- *The Steel Co. of Canada, Limited, Hamilton, Ont.

FORGINGS, drop

- *Dominion Forge and Stamping Co., Walkerville, Ont.

FOUNDRY EQUIPMENT

- *Northern Crane Works, Limited, Walkerville, Ont.

FOUNTAIN FRUITS and Juices

- J. J. McLaughlin, Ltd., Toronto.

FRICTION CLUTCH PULLEYS

- *Dodge Mfg. Co., Ltd., Toronto.

FROGS AND CROSSINGS, manganese

- Canadian Ramapo Iron Works, Ltd., Niagara Falls, Ont.

FUEL

- Standard Fuel Co., Toronto.

FUR GARMENTS, men's and women's

- Holt, Renfrew, Ltd., Quebec.

FUR GOODS

- John W. Peck & Co., Limited, Montreal, Que.

FUR TRIMMINGS, ornaments and buttons

- J. Henry Peters Co., 1 Mincing St., Toronto.

FURNACES

- McClary Mfg. Co., London, Ont.
- The Jas. Smart Mfg. Co., Limited, Brockville, Ont.

FURNACES, hot air

- Bedford Stove Co., Bedford, Que.

FURNACES, oil burning

- *Canadian Hoskins Co., Walkerville, Ont.

- *Mechanical Engineering Works, Montreal, Que.

FURNITURE, hall

- The George McLagan Furniture Co., Limited, Stratford, Ont.

FURNITURE, office

- The Canadian Office and School Furniture Co., Ltd., Preston, Ont.

FURNITURE, reed and rattan

- Imperial Rattan Co., Ltd., Stratford, Ont.

FUSES

- *Economy Fuse and Mfg. Co., Montreal.

GALVANIZED IRON

- *A. C. Leslie & Co., Montreal.

GALVANIZED SHEETS

- *Dominion Sheet Metal Co., Hamilton, Ont.

GALVANIZERS

- Acme Stamping & Tool Works, Ltd., Hamilton, Ont.

- *Ontario Wind Engine and Pump Co., Limited, Toronto.

GASOLINE ENGINES

- *Ontario Wind & Pump Co., Ltd., Toronto.

- De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

GASOLINE FIRE ENGINES

- *The Watrous Engine Works Co., Ltd., Brantford, Ont.

GASOLINE MOTORS, "Imperial"

- Marine
- Bruce Stewart & Co., Ltd., Charlottetown, P.E.I.

GASOLINE STORAGE SYSTEMS, special underground

- S. F. Bowser & Co., Toronto.

GASOLINE

- *The Imperial Oil Co., Limited, Toronto.

GEARS, cut

- *Hamilton Gear & Machine, Toronto.

GENERATORS

- *Canadian Crocker-Wheeler Co., Ltd., St. Catharines, Ont.

- *Canadian Westinghouse Co., Ltd., Hamilton, Ont.

GINS

- The Melchers Gin & Spirits Distillery Co., Ltd., Montreal, Que.

GLASSWARE

- Dominion Glass Co., Limited, Montreal, Que.

GLASSWARE, cut

- Roden Bros., Ltd., Toronto.

GLASS FOR BUILDINGS

- Toronto Plate Glass Importing Co., Limited, Toronto.

GLASS BENDERS

- Toronto Plate Glass Importing Co., Limited, Toronto.

GLASS, mirror

- Toronto Plate Glass Importing Co., Limited, Toronto.

GLOVES AND MITTS

- *A. R. Clarke & Co., Ltd., Toronto.

- Craig, Cowan Co., Ltd., Toronto.

GLUE

- Canada Glue Co., Ltd., Brantford.
- *Delany and Pettit, Ltd., Toronto.

GOLD-FILLED WIRE AND PLATE

- Canadian Seamless Wire Co., Toronto.

GOLD AND SILVER REFINERS

- Canadian Seamless Wire Co., Toronto.

GRAIN CRUSHERS (Rapid Easy)

- J. Fleury's Sons, Aurora, Ont.

GRAPE JUICE

- J. J. McLaughlin, Ltd., Toronto.
- The Welch Co., Ltd., St. Catharines.

GRATES

- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

GRAVITY CARRIERS

- *Canadian Mathews Gravity Carrier Co., Toronto.

GRILLES, metal

- *Canada Wire & Iron Goods Co., Hamilton, Ont.
- *Dennis Wire & Iron Works Co., London, Ont.

GRINDERS, Pedestal and Bench

- *Canadian Hart Wheels, Limited, Hamilton, Ont.

GRINDING and Polishing Machinery

- *Canadian Hart Wheels, Limited, Hamilton, Ont.

GRINDING WHEELS

- *Canadian Hart Wheels, Limited, Hamilton, Ont.
- *The Dominion Abrasive Wheel Co., Limited, New Toronto.

GRINDSTONES

- *Richards-Wilcox Canadian Co., Limited, London, Ont.

GUNN SECTIONAL BOOKCASES

- The Geo. McLagan Furniture Co., Limited, Stratford, Ont.

GUY ANCHORS

- B. J. Coglin Co., Ltd., Montreal.

GYPSUM, crushed

- *Albert Mfg. Co., Hillsborough, N.B.

GYPSUM PRODUCTS

- *Manitoba Gypsum Co., Ltd., Winnipeg, Man.
- De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

HALL FURNITURE

- The Geo. McLagan Furniture Co., Limited, Stratford, Ont.

HAMS

- F. W. Fearman Co., Ltd., Hamilton, Ont.

HANDLES (Axe, pick, sledge hammers, etc.)

- The Lachute Shuttle Co., Limited, Lachute Mills, P.Q.

HANGERS

- *Dodge Mfg. Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

HARDWARE

- *Richards-Wilcox Canadian Co., Limited, London, Ont.

- Taylor-Forbes Co., Limited, Guelph, Ont.

- The Jas. Smart Mfg. Co., Limited, Brockville, Ont.

HARDWOOD FLOORING

- Wilson Bros. Limited, Collingwood, Ont.

HARDWOOD INTERIOR FINISH

- Wilson Bros., Ltd., Collingwood, Ont.

HARDWOOD VENEER DOORS TO DETAIL

- Wilson Bros., Ltd., Collingwood, Ont.

HARNESSES

- Lamontagne Ltd., Montreal, Que.

HATS, men's straw

- The Crown Hat Co., Limited, Galt, Ont.

HATS, ladies' and children's straw

- The Crown Hat Co., Limited, Galt, Ont.

HATS, ladies' and children's felt and beaver

- The Crown Hat Co., Limited, Galt, Ont.

HATS, ladies' felt and straw

- Toronto Hat Mfg. Co., Toronto.

HAULAGE, Wire Rope

- The Dominion Wire Rope Co., Ltd., Montreal, Que.

HEATERS

- *Watrous Engine Works Co., Ltd., Brantford, Ont.

HEATERS, feed water

- *Darling Bros., Ltd., Montreal.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

HEATING APPLIANCES

- *C. A. Dunham Co., Ltd., Toronto.
- *Darling Bros., Ltd., Montreal.
- *Sheldons, Limited, Galt, Ont.

HEATING SYSTEMS

- *C. A. Dunham Co., Ltd., Toronto.

HESSIANS

- The Canadian Bag Co., Limited, Montreal, Que.
- *Scythes & Co., Limited, Toronto.

HINGES

- The Steel Co. of Canada, Limited, Hamilton, Ont.

HOISTS

- *M. Beatty & Sons, Ltd., Welland, Ont.
- *Northern Crane Works, Limited, Walkerville, Ont.

HOISTS, electric and pneumatic

- *M. Beatty & Sons, Ltd., Welland, Ont.
- *Canadian Link Belt Co., Toronto.
- *Northern Crane Works, Limited, Walkerville, Ont.

HOISTING MACHINERY

- *M. Beatty & Sons, Ltd., Welland, Ont.
- *Northern Crane Works, Limited, Walkerville, Ont.

HOSE, fire

- *Canadian Consolidated Rubber Co., Limited, Montreal, Que.

HOSE, half, Imperial

- Kingston Hosiery Co., Ltd., Kingston, Ont.

HOSE, rubber

- *Canadian Consolidated Rubber Co., Limited, Montreal, Que.
- *Gutta Percha & Rubber, Limited.

HYDRAULIC PRESSES

- *Bawden Machine Co., Limited, Toronto.
- *William R. Perrin, Ltd., Toronto.

ICE CREEPERS

- Parmenter & Bulloch Co., Limited, Gananoque, Ont.

ICE-MAKING MACHINERY

- The Linde Canadian Refrigeration Co., Limited, Montreal, Que.

INCUBATORS & BROODERS

- Lee Mfg. Co., Ltd., Pembroke, Ont.

INJECTORS, automatic and autopoitive

- Penberthy Injector Co., Limited, Windsor, Ont.

INTERLOCKING RUBBER TILING

- *Gutta Percha & Rubber Mfg. Co., of Toronto, Limited, Toronto.

INVERTS

- Standard Clay Products, Ltd., St. Johns, Que.

IRON

- *Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N.S.

IRON AND STEEL BARS

- *The Steel Co. of Canada, Limited, Hamilton, Ont.

IRON, refined bar

- Starr Mfg. Co., Ltd., Dartmouth, N.S.

IRON STAIRWAYS

- *Canada Wire & Iron Goods Co., Hamilton, Ont.
- *Dennis Wire & Iron Works Co., London, Ont.

IRONWORK, architectural

- *Canada Wire & Iron Goods Co., Hamilton, Ont.

IRONWORK, ornamental

- *Canada Wire & Iron Goods Co., Hamilton, Ont.

IRON, LEAD AND PUTTY

- A. R. Whittall, Montreal, Que.

JAM, canned goods, etc.

- E. D. Smith & Son, Limited.

JAPANS, enamels, etc.

- A. Muirhead Co., Ltd., Toronto.

JOINTERS

- *P. B. Yates Machine Co., Ltd., Hamilton, Ont.

JELLY POWDER

- S. H. Ewing & Sons, Montreal, Que.

JEWELRY, enamelled souvenir

- Caron Bros., Montreal, Que.

JEWELRY, gold-filled

- Caron Bros., Montreal, Que.

JOIST HANGERS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

KELSEY WARM AIR GENERATOR

The Jas. Smart Mfg. Co., Limited, Brockville, Ont.

KILNS

*Sheldons, Limited, Galt, Ont.

KINDLING

Standard Fuel Co., Toronto.

KNIFE GRINDERS

*W. H. Banfield & Sons, Toronto.

KNITTED GOODS

*Penman's, Limited, Paris, Ont.

KNIVES

Henry Disston and Sons, Toronto
The Peter Hay Knife Co., Limited, Galt, Ont.

Simonds Canada Saw Co., Limited, Montreal, Que.

KNIVES, pulp and paper

Henry Disston and Sons, Toronto.
The Peter Hay Knife Co., Limited, Galt, Ont.

KODAKS AND PHOTOGRAPHIC SUPPLIES

Canadian Kodak Co., Ltd., Toronto.

LABELS

Lawson & Jones, Ltd., London, Ont.

LABELS, lithographed

Harris Lithographing Co., Toronto.

LACE LEATHER

F. C. McCordick, St. Catharines, Ont.

*Sadler & Haworth, Montreal, Que.

*The D. K. McLaren Belting Co., Limited, Montreal, Que.

*The J. C. McLaren Belting Co., Limited, Montreal, Que.

LADDERS

Stratford Mfg. Co., Ltd., Stratford, Ont.

LADDERS, step.

*Otterville Mfg. Co., Ltd., Otterville, Ont.

LADLES, foundry

*Northern Crane Works, Limited, Walkerville, Ont.

LAGER

E. L. Drewry, Winnipeg, Man.

LARD

F. W. Fearman Co., Ltd., Hamilton, Ont.

LATH

The C. Beck Mfg. Co., Ltd., Penetanguishene, Ont.

LATHE CHUCKS

Ker & Goodwin, Brantford, Ont.

LATHE-DOGS

Canadian Billings & Spencer, Ltd., Welland, Ont.

LAUNCHES

Peterboro Canoe Co., Ltd., Peterboro, Ont.

LAWN MOWERS

Taylor-Forbes Co., Limited, Guelph, Ont.

LAWN SWINGS

Stratford Mfg. Co., Ltd., Stratford, Ont.

LAVATORIES, enameled

Amherst Foundry Co., Limited, Amherst, N.S.

LAUNDRY SINKS

Amherst Foundry Co., Limited, Amherst, N.S.

LEAD

*The Consolidated Mining and Smelting Co. of Canada, Limited, Trail, B.C.

LEAD GRINDERS

Benjamin Moore & Co., Limited, Toronto.

LEAD SHEET

Toronto Plate Glass Importing Co., Limited, Toronto.

LEAD PIPE

*The Steel Co. of Canada, Limited, Hamilton, Ont.

Toronto Plate Glass Importing Co., Limited, Toronto.

*The Canada Metal Co., Toronto.

LEATHER

The Robson Leather Co., Limited, Oshawa, Ont.

LEATHER, bookbinders'

Clarke & Clarke, Ltd., Toronto.

LEATHER, fancy

Clarke & Clarke, Ltd., Toronto.

LEATHER GOODS

Lamontagne, Ltd., Montreal, Que.

LEATHER, hemlock sole

The Breithaupt Leather Co., Ltd., Berlin, Ont.

LEATHER, patent colt and side leather

*A. R. Clarke & Co., Ltd., Toronto.

LEATHER, sheep skin, etc.

Clarke & Clarke, Ltd., Toronto.

LEATHER, upholstering

Clarke & Clarke, Ltd., Toronto.

LEATHER, upper

A. Davis & Son, Ltd., Kingston, Ont.

LINK BELTING

*Canadian Link Belt Co., Toronto.

*The Dodge Mfg. Co., Ltd., Toronto.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

LINOLEUM

Dominion Oil Cloth Co., Limited, Montreal, Que.

LITHOGRAPHED BUSINESS STATIONERY

Business Systems, Ltd., Toronto.

LITHOGRAPHED TIN WARE

*MacDonald Mfg. Co., Limited, Toronto.

LITHOGRAPHERS

American Bank Note Company, Ottawa, Ont.

Harris Lithographing Co., Toronto.

Stone, Limited, Toronto.

Rolph & Clark, Limited, Toronto.

LOCKERS

*Canada Wire & Iron Works Co., Hamilton, Ont.

*Dennis Wire & Iron Works Co., London, Ont.

*Geo. B. Meadows, Wire, Iron and Brass Works Co., Toronto.

LOCOMOTIVE BLOCKS

Standard Clay Products, Limited, St. Johns, Que.

LOCOMOTIVES, industrial

*Montreal Locomotive Works, Ltd., Montreal, Que.

LOCOMOTIVE & MARINE BRASS WORKS

The James Morrison Brass Mfg. Co., Limited, Toronto.

LOOSE LEAF, BINDERS AND FORMS

Business Systems, Ltd., Toronto.

LOOSE LEAF SYSTEMS

Copeland-Chatterton Co., Limited, Brampton, Ont.

LOOSE LEAF SUPPLIES

The Esdale Press, Ltd., Edmonton.

LUBRICATORS, steam sight feed

Penberthy Injector Co., Limited, Windsor, Ont.

LUGS, for silos and water tanks

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

*Otterville Mfg. Co., Ltd., Otterville, Ont.

LUMBER

The C. Beck Mfg. Co., Ltd., Penetanguishene, Ont.

G. & J. Esplen, Montreal, Que.

LUMBER, asbestos

*Eureka Mineral Wool & Asbestos Co., Toronto.

LUMBERING BLANKETS

Slingsby Mfg. Co., Ltd., Brantford, Ont.

LUMBER, red pine and spruce
Gillies Bros., Ltd., Braeside, Ont.

LUMBER, spruce, fir, larch and cedar
Fernie Lumber Co., Ltd., Fernie, B.C.

LUMBER, white pine

Gillies Bros., Ltd., Braeside, Ont.

MACHINE TOOLS

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, conveying

*Canadian Link Belt Co., Toronto.

*Canadian Mathews Gravity Carrier Co., Limited, Toronto.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

MACHINERY, flour mill

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

MACHINERY, grinding

*Canadian Hart Wheels, Limited, Hamilton, Ont.

MACHINERY, hoisting, etc.

*Polson Iron Works, Limited, Toronto.

J. & R. Weir, Montreal, Que.

*M. Beatty & Sons, Ltd., Welland, Ont.

*Northern Crane Works, Limited, Walkerville, Ont.

MACHINERY, ice cream

J. J. McLaughlin, Ltd., Toronto.

MACHINERY, iron working

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, pulp mill

*The Watrous Engine Works Co., Limited, Brantford, Ont.

MACHINERY, punching and shearing

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, railroad and car shop

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, roadmaking

Sawyer-Massey Co., Limited, Hamilton, Ont.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

MACHINERY, sawmill

The E. Long Mfg. Co., Limited, Orillia, Ont.

P. Payette & Co., Pentanguishene, Ont.

W. P. Plant, Hastings, Ont.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

*Yates, P. B., Machine Co., Ltd., Hamilton, Ont.

MACHINERY, sheet metal working

Brown, Boggs Co., Ltd., Hamilton, Ont.

MACHINERY, special

Bawden Machine Co., Limited, Toronto.

MACHINERY, tannery

W. P. Plant, Hastings, Ont.

MACHINERY, transmission

*Dodge Mfg. Co., Ltd., Toronto.

*Goldie & McCulloch Co., Limited, Galt, Ont.

MACHINERY, woodworking

*Yates, P. B., Machine Co., Ltd., Hamilton, Ont.

Preston Woodworking Machinery Co., Ltd., Preston.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

MACHINE WRENCHES

*Canadian Billings & Spencer, Ltd., Welland, Ont.

MACHINES, painting

Spramotor Co., London, Ont.

MAGNESITE

Canadian Carbonate Co., Limited, Montreal, Que.

MALT

*Hiram Walker & Sons, Limited, Walkerville, Ont.

MAPS AND MAP MOUNTING

The Geo. M. Hendry Co., Limited, Toronto.

Stone, Limited, Toronto.

MARTINGALE RINGS AND SLIDE LOOPS

The Arlington Co. of Canada, Ltd., Toronto.

MATCHERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

MATCHES

*The E. B. Eddy Co., Ltd., Hull.

MECHANICAL STOKERS

*The Jones Underfeed Stoker Co., Ltd., Toronto.

MEDICINES, patented and pharmaceutical

Dr. Ed. Morin & Cie., Ltd., Quebec.

METAL, babbitt

*Canada Metal Co., Toronto.

*Tallman Brass and Metal Co., Hamilton, Ont.

Alonso W. Spooner, Limited, Port Hope, Ont.

METAL CEILING

*Metallic Roofing Co., Limited, Toronto.

METAL PACKING

*Garlock Packing Company, Hamilton, Ont.

METAL, spinning and stamping

The Booth-Coulter Copper and Brass Co., Limited, Toronto.

METAL SHINGLES

*The Metallic Roofing Co. of Canada, Limited, Toronto.

METAL SIDING

*The Metallic Roofing Co., Ltd., Toronto.

MILK DEALERS' MACHINERY AND SUPPLIES

De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

MILLBOARD, asbestos

*Eureka Mineral Wool & Asbestos Co., Toronto.

MILLING CUTTERS

Pratt and Whitney Company of Canada, Dundas, Ont.

MITTS AND GLOVES (Indian, tan, red deerskins)

Holt, Renfrew Ltd., Quebec, Que.

A. R. Clarke & Co., Ltd., Toronto.

MOCCASINS AND SLIPPERS (Indian tanned leathers)

Holt, Renfrew Ltd., Quebec, Que.

MORTISES

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

MOTOR CARS

*Ford Co. of Canada, Ford, Ont.

*Willys-Overland, Ltd., West Toronto.

MOTORS, electric (alternating current)

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

Consolidated Electric Co., Limited, Toronto.

*Jones & Moore Electric Co., Ltd., Toronto.

*Canadian Crocker-Wheeler Co., Ltd., St. Catharines, Ont.

*T. & H. Electric Co., Hamilton.

MOTORS, electric (direct current)

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

Consolidated Electric Co., Limited, Toronto.

*Jones & Moore Electric Co., Ltd., Toronto.

*T. & H. Electric Co., Hamilton.

MOTORS, electric (repairing)

Consolidated Electric Co., Limited, Toronto.

*T. & H. Electric Co., Hamilton.

MOULDERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

NAILS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

NAILS, copper

Parmenter and Bulloch Co., Ltd., Gananoque, Ont.

NAILS, wire

Parmenter and Bulloch Co., Ltd., Gananoque, Ont.

The Graham Nail Works, Toronto.

NAPHTHA

*The Imperial Oil Co., Limited, Toronto.

NICKEL OXIDE

Coniagas Reduction Co., Limited, St. Catharines, Ont.

NUTS

*John Morrow Screw & Nut Co., Limited, Ingersoll, Ont.

*The National Acme Mfg. Co., Montreal, Que.

*The Steel Co. of Canada, Limited, Hamilton, Ont.

OAKUM, plumbers, Canadian Navy

Factory Waste and Metal Co., Montreal, Que.

*Scrives & Co., Ltd., Toronto.

OAT CRUSHERS AND FLAKERS
J. Fleury's Sons, Aurora, Ont.**OFFICE DESKS**

*Goderich Organ Co., Goderich, Ont.

OFFICE EQUIPMENT

*Office Specialty Co., Newmarket, Ont.

OFFICE FURNITURE

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

OILS

Brandram-Henderson, Ltd., Montreal, Que.

A. Ramsay & Son Co., Montreal, Que.

Sherwin-Williams Co. of Canada, Limited, Montreal, Que.

OIL FILTRATION AND CIRCULATING SYSTEMS

S. F. Bowser & Co., Toronto.

OIL STORAGE SYSTEMS, self-measuring

S. F. Bowser & Co., Toronto.

OIL COMPANIES

*Canadian Oil Cos., Toronto.

Commercial Oil Co., Ltd., Hamilton, Ont.

*Imperial Oil Co., Toronto.

OILS (Petroleum products)

*British American Oil Co., Limited, Toronto.

*The Imperial Oil Co., Limited, Toronto.

OILS, road

*Paterson Manufacturing Company, Toronto and Montreal.

OILCLOTHS, floor and table

Dominion Oil Cloth Co., Limited, Montreal, Que.

ORGANS

*Goderich Organ Co., Goderich, Ont.

Karn-Morris Piano and Organ Co., Ltd., Woodstock, Ont.

Thomas Organ & Piano Co., Woodstock, Ont.

ORGANS, pipe

Casavant Freres, St. Hyacinthe, Que.

Karn-Morris Piano and Organ Co., Ltd., Woodstock, Ont.

ORGANS, parlor

*Goderich Organ Co., Goderich, Ont.

ORNAMENTAL IRON WORK

*Canada Wire & Iron Goods Co., Hamilton, Ont.

*Dennis Wire & Iron Works Co., London, Ont.

*The Geo. B. Meadows, Toronto Iron and Brass Goods Works Co., Limited, Toronto.

OVENS, portable bake

Bedford Stove Co., Bedford, Que.

Mackenzie & Co., Ottawa, Ont.

Peerless Overall Co., Rock Island, Que.

Walker Pant and Shirt Co., Walkerville and Chatham, Ont.

The Standard Shirt Co., Limited, Montreal, Que.

OVERCOATINGS

Rosamond Woollen Co., Almonte, Ont.

OVERHEAD RUNWAYS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

OXY-ACETYLENE WELDING

*L'Air Liquide Society, Montreal.

OXYGEN

*L'Air Liquide Society, Montreal.

PACKING BOXES

Barchard & Co., Limited, Toronto.

PACKING, engine

*Garlock Packing Co., Hamilton.

PACKING, rubber

*Canadian Consolidated Rubber Co., Limited, Montreal, Que.

*Gutta Percha & Rubber, Limited, Jenkins Bros., Ltd., Montreal, Que.

PAIS AND TUBS, wooden

The C. Beck Mfg. Co., Limited, Penetanguishene, Ont.

PAINTERS' SUPPLIES

A. Muirhead Co., Ltd., Toronto.

PAINTS

R. C. Jamieson & Co., Limited, Montreal, Que.

PAINTS and VARNISHES

A. Muirhead Co., Ltd., Toronto.

Benjamin Moore & Co., Limited, Toronto.

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

The Imperial Varnish & Color Co., Limited, Toronto.

The Staneland Co., Ltd., Victoria, B.C.

A. Ramsay & Sons Co., Montreal, Que.

*The Dougall Varnish Co., Limited, Montreal, Que.

Standard Paint Co. of Canada, Limited, Montreal, Que.

*Toch Bros., Toronto.

PAINTS, barn and bridge

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

PAINTS, preservative

Standard Paint Co. of Canada, Limited, Montreal, Que.

*Paterson Manufacturing Company, Toronto and Montreal.

*Toch Bros., Toronto.

PAPER BOARDS

Bathurst Lumber Co., Limited, Bathurst, N.B.

PAPER, book

Barber Paper & Coating Mills, Ltd., Georgetown, Ont.

PAPER BOXES

King Paper Box Co., Ltd., Montreal, Que.

*Rudd Paper Box Co., Limited, Toronto.

PAPERS, bond

*Howard Smith Paper Mills, Ltd., Montreal.

*Rolland Paper Co., Ltd., Montreal, Que.

PAPER, envelope

Provincial Paper Mills Limited, Georgetown, Ont.

The Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER KRAFT, wrapping printing and waterproof

*Beveridge Paper Co., Ltd., Montreal, Que.

PAPER, news

*The Riordon Pulp and Paper Co., Montreal, Que.

PAPER, wrapping

*The Riordon Pulp and Paper Co., Montreal, Que.

PAPERS, building

Bathurst Lumber Co., Ltd., Bathurst, N.B.

*The Riordon Pulp and Paper Co., Montreal, Que.

Standard Paint Co. of Canada, Ltd., Montreal, Que.

PAPER, coated, book and label

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, coated cover

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, coated box board

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, enamelled blotting

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, gummed tapes

Gummed Papers, Ltd., Brampton, Ont.

PAPER, label

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, ledger

*Howard Smith Paper Mills, Ltd., Montreal.

*Rolland Paper Co., Limited, Montreal, Que.

The Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER, super-book

The Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER, wall

Stauntons, Ltd., Toronto.

PAPER, Waxed

Business Systems, Ltd., Toronto.

PAPER, writing

The Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER, writing, high-grade

*Howard Smith Paper Mills, Ltd., Montreal.

*Rolland Paper Co., Limited, Montreal, Que.

PARK SEATS

Stratford Mfg. Co., Ltd., Stratford, Ont.

PARLOR SUNDRIES

The Geo. McLagan Furniture Co., Limited, Stratford, Ont.

PATENTS

Fetherstonhaugh & Co., Toronto.

Ridout and Maybee, Toronto.

PATENT LITIGATION

Ridout and Maybee, Toronto.

PAY ROLL AUDITS

*International Time Recording Co. of Canada, Ltd., Toronto.

PEAS AND BEANS FOR SEED

W. P. Niles, Ltd., Wellington, Ont.

PERFORATED METALS

*Canada Wire & Iron Goods Co., Hamilton, Ont.

PERFORATED MUSIC ROLLS

The Otto Higel Co., Ltd., Toronto.

PERFUMES AND TOILET PREPARATIONS

Sovereign Perfumes Ltd., Toronto.

PETROLEUM PRODUCTS

*The Imperial Oil Co., Limited, Toronto.

PHOTOMAILERS

*The Thompson & Norris Co. of Canada, Ltd., Niagara Falls, Ont.

PIANOS

Dominion Organ & Piano Co., Ltd., Bowmanville, Ont.

*Gourlay, Winter and Leeming, Toronto.

Karn-Morris Piano and Organ Co., Limited, Woodstock, Ont.

PIANO ACTIONS

The Otto Higel Co., Ltd., Toronto.

PIANO KEYS

The Otto Higel Co., Ltd., Toronto.

PIANOS, player

*Gourlay, Winter and Leeming, Toronto.

Karn-Morris Piano and Organ Co., Limited, Woodstock, Ont.

PIANO, player actions

The Otto Higel Co., Ltd., Toronto.

PIANO STOOLS and BENCHES

*Goderich Organ Co., Goderich, Ont.

PICKLES AND CATSUPS

T. A. Lytle Co., Ltd., Toronto.

PIG IRON

*The Steel Co. of Canada, Limited, Hamilton, Ont.

PINE DOORS, SASH, MOULDINGS, ETC.

Wilson Bros., Limited, Collingwood, Ont.

PINS, society, emblems and badges

Caron Bros., Montreal, Que.

PIPE, cast iron, for water and gas

National Iron Works, Ltd., Toronto.

PIPE COUPLINGS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

PIPE COVERINGS

*Enreka Mineral Wood & Asbestos Co., Toronto.

PIPE ORGANS

Karn-Morris Piano and Organ Co., Limited, Woodstock, Ont.

PIPES, culvert

Standard Clay Products, Ltd., St. Johns, Que.

PIPE AND NIPPLE, black and galvanized

*Canadian Tube & Iron Co., Ltd., Montreal, Que.

PIPE, sewer

Hamilton and Toronto Sewer Pipe Co., Limited, Hamilton, Ont.

Standard Clay Products, Ltd., St. Johns, Que.

PIPE, soil and fittings

Athes Foundry, Ltd., Toronto and Winnipeg.

Warden King Ltd., Montreal, Que.

PIPE AND TUBES, wrought

*Page-Hersey Iron Tube and Lead Co., Ltd., Toronto.

PIPE, threading and cutting off machines

John H. Hall & Sons, Limited, Brantford, Ont.

PISTON RODS

*The Canadian Drawn Steel Co., Limited, Hamilton, Ont.

*Union Drawn Steel Co., Limited, Hamilton, Ont.

PLANERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

PLANING MILLS

G. & J. Esplen, Montreal, Que.

PLASTER OF PARIS

*Albert Mfg. Co., Hillsborough, N.B.

PLASTER, hard wall

*Albert Mfg. Co., Hillsborough, N.B.

PLASTER, land

*Albert Mfg. Co., Hillsborough, N.B.

PLOWS

J. Fleury's Sons, Aurora, Ont.

PLUMBERS' SUPPLIES

The Garth Co., Montreal, Que.

The James Morrison Brass Mfg. Co., Ltd., Toronto.

PLUMBING APPLIANCES

Standard Sanitary Mfg. Co., Ltd., Limited, Toronto.

PLUMBING SUPPLIES

Toronto Plate Glass Importing Co., Limited, Toronto.

PNEUMATIC MACHINERY

*Canadian Ingersoll-Rand Co., Sherbrooke, P.Q.

POLE LINE MATERIAL (wooden insulator top pins, side blocks, pole steps, cross arms)

The Lachute Shuttle Co., Limited, Lachute Mills, P.Q.

POLES, curtain

Daly & Morin, Montreal, Que.

POLES, flag

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

POLES, telegraph and telephone, cedar

Ferne Lumber Co., Ltd., Fernie, B.C.

PORK PACKERS AND CHEESE EXPORTERS

The Ingersoll Packing Co., Limited, Ingersoll, Ont.

POSTS, split cedar fence

Ferne Lumber Co., Ltd., Fernie, B.C.

POSTERS

Stone, Limited, Toronto.

POULTRY SUPPLIES AND MEDICINES

Lee Mfg. Co., Ltd., Pembroke, Ont.

POWDER, blasting

Canadian Explosives, Ltd., Montreal, Que.

POWER PRESSES

*Canadian Boomer & Boschert Press Co., Limited, Montreal, Que.

*William R. Perrin, Ltd., Toronto.

PRESSES, baling and filter

*Canadian Boomer & Boschert Press Co., Ltd., Montreal, Que.

*William R. Perrin, Ltd., Toronto.

PRESSES, hydraulic

*Canadian Boomer & Boschert Press Co., Limited, Montreal, Que.

PRESSES, sheet metal stamping

Brown, Boggs Co., Ltd., Hamilton, Ont.

PRESSES, veneer

*William R. Perrin, Ltd., Toronto.
 *Canadian Boomer & Boschert Press Co., Ltd., Montreal, Que.

PRINTERS

Rous & Mann, Ltd., Toronto.
 R. G. McLean, Toronto.

PRINTERS, catalogue

R. G. McLean, Toronto.

PRINTING AND LITHOGRAPHING

Lawsen & Jones, Limited, London, Ont.

PULLEYS

*Dodge Mfg. Co., Ltd., Toronto.
 *The Goldie & McCulloch Co., Ltd., Galt, Ont.

PULP, bleached sulphite

The Edward Partington Pulp and Paper Co., St. John, N.B.

PULP, sulphide

Bathurst Lumber Co., Ltd., Bathurst, N.B.

PUMPS

*Bawden Machine Co., Ltd., Toronto.
 *Canadian Fairbanks-Morse Company, Limited, Montreal, Que.
 *Darling Bros., Ltd., Montreal.
 *Ontario Wind Engine & Pump Co., Ltd., Toronto.
 *Smart-Turner Machine Co., Ltd., Hamilton, Ont.
 Spramotor Co., London, Ont.

PUMPS, boiler feed

*Bawden Machine Co., Ltd., Toronto.
 *Smart-Turner Machine Co., Ltd., Hamilton, Ont.
 *The Goldie & McCulloch Co., Ltd., Galt, Ont.

PUMPS, centrifugal

*M. Beatty & Sons, Ltd., Welland, Ont.
 *Smart-Turner Machine Co., Ltd., Hamilton, Ont.
 *Watrous Engine Works Co., Ltd., Brantford, Ont.

PUMPS, iron

*Goold-Shapley-Muir Co., Limited, Brantford, Ont.
 *Smart-Turner Machine Co., Ltd., Hamilton, Ont.
 *Watrous Engine Works Co., Ltd., Brantford, Ont.

PUMPS, turbine and reciprocating

*Bawden Machine Co., Ltd., Toronto.
 *Smart-Turner Machine Co., Ltd., Hamilton, Ont.
 John McDougall, Caledonian Iron Works Co., Ltd., Montreal, Que.

PUNCHES

*Pratt & Whitney Co., Dundas.

PYROMETERS

*Canadian Hoskins Co., Walkerville, Ont.

RADIATORS

Taylor-Forbes Co., Limited, Guelph, Ont.
 Warden King, Ltd., Montreal, Que.

RAILINGS, brass and iron

*Dennis Wire & Iron Works Co., London, Ont.

RAILWAY SIGNAL APPLIANCES

General Railway Signal Co. of Canada, Ltd., Montreal, Que.

RAILWAY SUPPLIES

*Canadian Steel Foundries, Ltd., Montreal, Que.
 *Chicago Bridge & Iron Works, Bridgeburg, Ont.
 B. J. Coghlin Co., Ltd., Montreal, Que.

RAILWAY TARIFF BINDERS

The Esdale Press Ltd., Edmonton.

READY-TO-WEAR GARMENTS, LADIES'

H. C. Boulter Co., Ltd., Toronto.

REAMERS

*Pratt & Whitney Co., Dundas.
 *Butterfield & Co., Rock Island, P.Q.

"REDWOOD" lager

E. L. Drewry, Winnipeg, Man.

REED AND RATTAN GOODS

Canada Furniture Mfgs., Limited, Woodstock, Ont.

REFRIGERATORS

Sanderson-Harold Co., Ltd., Paris, Ont.
 Lee Mfg. Co., Ltd., Pembroke, Ont.

REFRIGERATING MACHINERY

The Linde Canadian Refrigeration Co., Ltd., Montreal, Que.

REFRIGERATORS, store, homes and institutions

Ham & Nott Co., Ltd., Brantford, Ont.
 John Hillock & Co., Ltd., Toronto.

REINFORCEMENT BARS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

REINFORCEMENT for concrete

*Canada Wire & Iron Goods Co., Hamilton, Ont.

REVOLVING DOORS

*A. B. Ormsby Co., Ltd., Toronto.

RINGS, gold

Caron Bros., Montreal, Que.

RIVETS

*Canadian Tube & Iron Co., Ltd.,
 *The Steel Co. of Canada, Limited, Hamilton, Ont.

RIVETS, bifurcated and tubular

Farmer & Bulloch Co., Limited, Gananoque, Ont.

RIVETS AND BURS, iron, copper and brass

Farmer & Bulloch Co., Limited, Gananoque, Ont.

ROLLERS, shade

Daly & Morin, Montreal, Que.

ROOFING, metal

*Metallic Roofing Co., Limited, Toronto.

ROOFING, ready to lay

Standard Paint Co. of Canada, Ltd., Montreal, Que.
 *Paterson Mfg. Co., Toronto and Montreal.

ROOF TRUSSES

*The Canadian Bridge Co., Ltd., Walkerville, Ont.
 *Dominion Bridge Co., Ltd., Montreal, Que.

ROPE

*Doon Twines Ltd., Doon, Ont.
 *Shurly & Derrett, Ltd., Toronto.

ROPE, cotton

Hamilton Cotton Co., Hamilton, Ont.

RUBBER FOOTWEAR

Ames Holden, McCready, Limited, Montreal, Que.
 *Gutta Percha & Rubber, Ltd.
 The Miner Rubber Co., Limited, Granby, Que.

RUBBER GOODS

*Canadian Consolidated Rubber Co., Limited, Montreal, Que.
 *Gutta Percha & Rubber, Ltd.

RUBBER MOULDS

Bawden Machine Co., Ltd., Toronto.

RUBBER PACKING

*Garlock Packing Company, Hamilton, Ont.

RULES

The Lufkin Rule Co. of Canada, Ltd., Windsor, Ont.

RYE

The St. Hyacinthe Distillery Co., Ltd., St. Hyacinthe, Que.

SADDLERY HARDWARE

*Dominion Forge and Stamping Co., Walkerville, Ont.

SAFES

*Goldie & McCulloch Co., Limited, Galt, Ont.

SAMPLE CASES

The M. Langmuir Mfg. Co. of Toronto, Ltd., Toronto.
 J. Eveleigh & Co., Ltd., Montreal, Que.

SANDERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

SANDPAPER

*Delany and Pettit, Ltd., Toronto.

SASH CORD, cotton

Hamilton Cotton Co., Hamilton, Ont.

SALT

Canadian Salt Co., Ltd., Windsor, Ont.
 The Dominion Salt Co., Limited, Sarnia, Ont.

SANITARY PAPER TOWELS

*E. B. Eddy Co., Ltd., Hull, Que.

SAW SHARPENING MACHINERY

*Canadian Hart Wheels, Limited, Hamilton, Ont.

SAWS

Henry Disston & Sons, Limited, Toronto.
 Shurly & Deitrich, Galt, Ont.

SAWS, crosscut and band

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.
 Shurly & Deitrich, Galt, Ont.

SAWS, circular mill

Shurly & Deitrich, Galt, Ont.

SAWS, hack

*Victor Saw Works, Ltd., Hamilton, Ont.

SAWS, of all kinds

Simonds Canada Saw Co., Limited, Montreal, Que.

SAWS, rip

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.
 Shurly & Deitrich, Galt, Ont.

SAWMILLS

G. & J. Esplen, Montreal, Que.
 *The Watrous Engine Works Co., Ltd., Brantford, Ont.

SAWS, specialties

*Victor Saw Works, Ltd., Hamilton, Ont.

SCALES

The Gurney Scale Co., Hamilton, Ont.

SCALES, counter

The Gurney Scale Co., Hamilton, Ont.

SCALES, railway track, etc.

The Gurney Scale Co., Hamilton, Ont.

SCREENS

*Canada Wire & Iron Goods Co., Hamilton, Ont.

SCREEN DOORS AND WINDOWS

Sanderson-Harold Co., Ltd., Paris, Ont.
 Ham & Nott Co., Ltd., Brantford, Ont.

SCREWS

*John Morrow Screw & Nut Co., Ltd., Ingersoll, Ont.
 *The National Acme Mfg. Co., Montreal, Que.
 *The Steel Co. of Canada, Limited, Hamilton, Ont.

SCREW PLATES

*Butterfield & Co., Rock Island, P.Q.

SECURITIES, engraved

American Bank Note Co., Ottawa, Ont.

SERGES

Rosamond Woollen Co., Almonte, Ont.

SHAFTING

Canada Forge Co., Ltd., Welland, Ont.
 *Canadian Drawn Steel Co., Ltd., Hamilton, Ont.
 *The Goldie & McCulloch Co., Ltd., Galt, Ont.
 *Union Drawn Steel Co., Limited, Hamilton, Ont.
 *Dodge Mfg. Co., Ltd., Toronto.

SHANTY BLANKETS

Slingsby Mfg. Co., Ltd., Brantford, Ont.

SHAPERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

SHEAR BLADES, iron

The Peter Hay Knife Co., Limited, Galt, Ont.

SHEATHING

*Paterson Mfg. Co., Toronto and Montreal.

SHEATHING, asbestos corrugated

*Eureka Mineral Wool & Asbestos Co., Toronto.

SHEET METAL STAMPINGS

Acme Stamping & Tool Works, Ltd., Hamilton, Ont.

SHIRTS

MacKenzie & Co., Ottawa, Ont.
 John W. Peck & Co., Ltd., Montreal, Que.

SHIRTS, workmen's

*A. R. Clarke & Co., Ltd., Toronto.

SHOE PEGWOOD

O. Chalifour, Quebec, Que.

SHOE LININGS

Galt Knitting Co., Ltd., Galt, Ont.

SHOES, running and athletic

Ames-Holden-McCready, Ltd., Montreal, Que.

SHOOKS

Barchard & Co., Ltd., Montreal, Que.

SILVER BULLION

Coniagas Reduction Co., Ltd., St. Catharines, Ont.

SILVERSMITH

Canadian Wm. A. Rogers, Ltd., Toronto.
 Standard Silver Co., Toronto.

SILVERWARE, sterling

Roden Bros., Limited, Toronto.

SINKS, enamelled

Amherst Foundry Co., Limited, Amherst, N.S.

SKATES, figure

Canada Cycle and Motor Co., Ltd., Toronto.

SKATES, genuine Acme

Canada Cycle and Motor Co., Ltd., Toronto.

SKATES, hockey

Canada Cycle and Motor Co., Ltd., Toronto.

SKATES, ice

Canada Cycle and Motor Co., Ltd., Toronto.

SKIFFS

Peterboro Canoe Co., Ltd., Peterboro, Ont.

SKYLIGHTS

*A. B. Ormsby Co., Ltd., Toronto.
 *Metallic Roofing Co., Limited, Toronto.

SLEIGHS

Tudhope-Anderson Co., Limited, Orillia, Ont.

SLIPPERS

Ames-Holden-McCready, Ltd., Montreal, Que.

SMOKE CONSUMERS

*The Jones Underfeed Stoker Co., Ltd., Toronto.

SOAPS

J. Barsalou & Co., Ltd., Montreal, Que.

SOAP (soft, oil)

The Imperial Varnish & Color Co., Ltd., Toronto.
 Sherwin-Williams Co. of Canada, Limited, Montreal, Que.

SODA WATER FOUNTAINS

J. J. McLaughlin, Ltd., Toronto.

SOIL PIPE

Anthes Foundry, Ltd., Toronto.

SOLDER

Alonzo W. Spooner, Ltd., Port Hope, Ont.
 *Canada Metal Co., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.

SOLDER, silver

Geo. H. Lees & Co., Hamilton.

SOLDER, wire and bar

*American Can Co., Montreal, and Hamilton.

SOLDERING IRONS AND COPPERS

Brown, Boggs Co., Ltd., Hamilton, Ont.

SNOWSHOES

Holt, Renfrew, Ltd., Quebec, Que.

SPARK PLUGS

Canadian Carbon Co., Limited, Toronto.

SPIRAL CONVEYORS

*Canadian Mathews Gravity Carrier Co., Ltd., Toronto.
 *The Goldie & McCulloch Co., Ltd., Galt, Ont.

- SPLIT PEAS**
H. Murton, Guelph, Ont.
- SPIKES, railway and marine**
Starr Mfg. Co., Ltd., Dartmouth, N.S.
- SPIRITS**
The St. Hyacinthe Distillery Co., Ltd., St. Hyacinthe, Que.
*Hiram Walker & Sons, Limited, Walkerville, Ont.
- SPORTING MEDALS AND TROPHIES**
Roden Bros., Limited, Toronto.
- SPRAYERS**
Sparamotor Co., London, Ont.
- SPRING COTTERS**
*Richards-Wilcox Canadian Co., Limited, London, Ont.
- SPRINGS**
*Canadian Steel Foundries, Ltd., Montreal, Que.
B. J. Coghlin Co., Ltd., Montreal, Que.
Guelph Spring & Axle Co., Ltd., Guelph, Ont.
- SPRINGS, carriage and automobile**
Guelph Spring and Axle Co., Ltd., Guelph, Ont.
- SPRINKLER SYSTEMS**
*Chicago Bridge & Iron Works, Bridgeburg, Ont.
*General Fire Equipment Co., Ltd., Toronto.
*Purdy, Mansell, Ltd., Toronto.
*Vogel Co. of Canada, Ltd., Montreal, Que.
- SPROCKETS, gray iron and flint rim**
*Canadian Link Belt Co., Toronto.
- STAINS**
R. C. Jamieson & Co., Ltd., Montreal, Que.
- STAINS, creosote shingle**
A. Muirhead Co., Ltd., Toronto.
- STAMPINGS**
*Dominion Forge and Stamping Co., Ltd., Walkerville, Ont.
- STAMPS, steel, brass and rubber**
Pritchard-Andrews Co. of Ottawa, Ltd., Ottawa, Ont.
- STAMP MILLS**
*Jenckes Machine Co., Sherbrooke.
- STATIONERY, office**
Harris Lithographing Co., Toronto.
- STEAM PIPE AND BOILER COVERINGS, asbestos**
*Eureka Mineral Wool & Asbestos Co., Toronto.
- STEAM SHOVELS**
*M. Beatty & Sons, Ltd., Welland, Ont.
- STEAM SPECIALTIES**
*C. A. Dunham Co., Ltd., Toronto.
*Darling Bros., Ltd., Montreal.
*Sheldons, Ltd., Galt.
- STEAM TRAPS**
*C. A. Dunham Co., Ltd., Toronto.
*Canadian Morehead Manufacturing Co., Limited, Woodstock.
- STEEL**
*Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N.S.
- STEEL BILLETS AND BLOOMS**
*The Steel Company of Canada, Limited, Hamilton.
- STEEL BUILDINGS**
*The Canadian Bridge Co., Ltd., Walkerville, Ont.
*Dominion Bridge Co., Ltd., Montreal.
- STEEL CASTINGS**
*Canadian Steel Foundries, Ltd., Montreal, Que.
*Dominion Steel Foundry Co., Ltd., Hamilton.
*Joliette Steel Co., Ltd., Montreal.
- STEEL FILING EQUIPMENT**
*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.
- STEEL PEN STOCKS**
*Jenckes Machine Co., Sherbrooke.
- STEEL RODS**
*The Steel Co. of Canada, Ltd., Hamilton.
- STEEL SASH**
*Dennis Wire & Iron Works Co., London.
- STEEL SHELVEING**
*Dennis Wire & Iron Works Co., London.
- STEEL WIRE RODS**
*The Steel Company of Canada, Limited, Hamilton.
- TELEPHONE ACCESSORIES**
*Northern Electric Co., Limited, Montreal.
- STENCILS, brass**
Pritchard-Andrews Co. of Ottawa, Ltd., Ottawa, Ont.
- STEREOTYPING**
Central Press Agency, Toronto
- STOKERS**
*The Jones Underfeed Stoker Co., Ltd., Toronto.
- STOOLS AND BENCHES, piano and organ**
*Otterville Mfg. Co., Ltd., Otterville, Ont.
- STONE**
The Corinthian Stone Co., Guelph, Ont.
The Hagersville Contracting Co., Hagersville, Ont.
- STORE FITTINGS**
The Canadian Office & School Furniture Co., Ltd., Preston, Ont.
- STOVES**
Tudhope-Anderson Co., Limited, Orillia, Ont.
Bedford Stove Co., Bedford, Que.
- STOVE LININGS**
Standard Clay Products, Ltd., St. Johns, Que.
- STOVES AND RANGES**
Bedford Stove Co., Bedford, Que.
Lee Mfg. Co., Ltd., Pembroke, Ont.
The Jas. Smart Mfg. Co., Ltd., Brockville, Ont.
McClary Mfg. Co., London, Ont.
- STRETCHERS, lace curtain**
*Otterville Mfg. Co., Ltd., Otterville, Ont.
- STRUCTURAL STEEL**
*Dominion Bridge Co., Montreal.
*Hamilton Bridge Works Co., Ltd., Hamilton.
*McKinnon Holmes & Co., Sherbrooke, P.Q.
*The Canadian Bridge Co., Ltd., Walkerville, Ont.
*The Structural Steel Co., Ltd., Montreal.
- SUIT CASES**
J. Eveleigh & Co., Ltd., Montreal.
The M. Langmuir Mfg. Co. of Toronto, Ltd., Toronto.
- SURFACERS**
*P. B. Yates Machine Co., Ltd., Hamilton, Ont.
- SWITCHES, railway**
Canadian Ramapo Iron Works, Ltd., Niagara Falls, Ont.
- SWITCHES AND FROGS**
*Canadian Steel Foundries, Ltd., Montreal, Que.
- SWITCH STANDS**
Canadian Ramapo Iron Works, Ltd., Niagara Falls, Ont.
- TABLE COVERS, chenille**
Hamilton Cotton Co., Hamilton, Ont.
- TANKS**
*Chicago Bridge & Iron Works, Bridgeburg, Ont.
Goold-Shapley-Muir Co., Ltd., Brantford, Ont.
*McKinnon Holmes & Co., Sherbrooke, P.Q.
*Ontario Wind Engine & Pump Co., Ltd., Toronto.
*The Goldie & McCulloch Co., Ltd., Galt.
*The Watrous Engine Works Co., Ltd., Brantford.
- TANNERS' SUPPLIES**
McClary Mfg. Co., London, Ont.
- TAPS**
*Butterfield & Co., Rock Island, P.Q.
*Pratt & Whitney Co., Dundas.
- TAPES, measuring**
The Lufkin Rule Co., of Canada, Ltd., Windsor, Ont.
- TAPES, paper and cloth, gummed and ungummed**
Gummed Papers, Ltd., Brampton.
- TELEPHONE ACCESSORIES**
*Canadian Independent Telephone Co., Toronto.
*Northern Electric Co., Limited, Montreal, Que.
- TENTS**
Mackenzie & Co., Ottawa, Canada.
Turner, J. J., & Sons, Peterboro, Ont.
*Scythes & Co., Ltd., Toronto.
- TERRA ALBA**
*Albert Mfg. Co., Hillsborough, N.B.
- TERRA COTTA (architectural)**
Toronto Plate Glass Importing Co., Ltd., Toronto.
- TEXTILE SUPPLIES (shuttles, bobbins, spools and picker sticks.)**
The Lachute Shuttle Co., Limited, Lachute Mills, P.Q.
- THUMB SCREWS**
*Canadian Billings & Spencer, Ltd., Welland.
- TILING, interlocking rubber**
Dunlop Tire & Rubber Goods Co., Ltd., Toronto.
*Gutta Percha & Rubber, Ltd.
- TIME RECORDERS**
*International Time Recording Co. of Canada, Ltd., Toronto.
- TIRES, cycle, auto and truck**
Dunlop Tire & Rubber Goods Co., Ltd., Toronto.
*Gutta Percha & Rubber, Ltd.
- TRADE MARKS AND DESIGNS**
Ridout & Maybee, Toronto.
- TRAPS**
*C. A. Dunham Co., Ltd., Toronto.
*Canadian Morehead Mfg. Co., Woodstock.
- TRANSFORMERS**
*The Canadian Crocker-Wheeler Co., Limited, St. Catharines.
- TOOLS, track**
B. J. Coghlin Co., Ltd., Hamilton, Ont.
- TOOLS, sheet metal workers'**
Brown, Boggs Co., Ltd., Hamilton, Ont.
- TRANSMISSION MACHINERY**
*Canadian Link Belt Co., Toronto.
*Dodge Mfg. Co., Ltd., Toronto.
*The Goldie & McCulloch Co., Ltd., Galt, Ont.
*The Watrous Engine Works Co., Ltd., Brantford.
- TROLLEYS**
*Richard-Wilcox Canadian Co., Limited, London, Ont.
*Northern Crane Works, Limited, Walkerville.
- TRUCKS**
The Gurney Scale Co., Hamilton, Ont.
*Northern Crane Works, Limited, Walkerville.
- TRUCKS, brick, tile and lumber**
*Watrous Engine Works Co., Ltd., Brantford.
- TRUCKS, motor**
*National Steel Car Co., Limited, Hamilton.
- TRUCKS, warehouse and factory**
The W. S. Mahaffy Co., Toronto.
- TRUCKS FOR OFFICE AND VAULT USE**
*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.
- TRUNKS**
Lamontagne Ltd., Montreal, Que.
J. Eveleigh & Co., Ltd., Montreal, Que.
The M. Langmuir Mfg. Co. of Toronto, Ltd., Toronto.
- TUBING, brass and copper**
*Booth-oulter Copper & Brass Co., Ltd., Toronto.
Canadian Seamless Wire Co., Toronto.
*Tallman Brass and Metal Co., Hamilton, Ont.
- TUBING, gold and silver**
Canadian Seamless Wire Co., Toronto.
- TUMBLERS, foundry**
*Northern Crane Works, Limited, Walkerville.
*Smart-Turner Machine Co., Ltd., Hamilton, Ont.
- TURBINES, steam**
*The Canadian Crocker-Wheeler Co., Limited, St. Catharines.
- TWEEDS**
Rosamond Woollen Co., Almonte, Ont.
- TWINES**
*Doon Twines Ltd., Doon, Ont.
*Shurly & Derrett, Ltd., Toronto.
- TWINES, binder**
Brantford Cordage Co., Ltd., Brantford, Ont.
- TWINES, cotton**
Hamilton Cotton Co., Hamilton, Ont.
- TWIST DRILLS**
*John Morrow Screw and Nut Co., Ltd., Ingersoll.
*Pratt and Whitney Co., of Canada, Dundas, Ont.
*The Wilt Twist Drill Co., Ltd., Walkerville, Ont.
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Galt Knitting Co., Ltd., Galt, Ont.
- UNDERWEAR, imperial**
Kingston Hosiery Co., Ltd., Kingston, Ont.
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*Otterville Mfg. Co., Ltd., Otterville, Ont.
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*Kerr Engine Co., Ltd., Walkerville.
- VALVES, for steam and water**
Jenkins Bros., Ltd., Montreal, Que.
- VALVES, regrinding globe, angle, cross checks, swing checks, etc.**
Penberthy Injector Co., Ltd., Windsor, Ont.
- VARNISHES**
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Berry Bros., Walkerville, Ont.
*Dougall Varnish Co., Ltd., Montreal.
R. C. Jamieson & Co., Ltd., Montreal, Que.
- VAULT FITTINGS, steel**
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- VAULTS AND VAULT DOORS**
*The Goldie & McCulloch Co., Ltd., Galt.
- VENTILATING APPLIANCES**
*Sheldons, Ltd., Galt.
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- VINEGAR**
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Tudhope-Anderson Co., Ltd., Orillia, Ont.
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Standard Clay Products, Ltd., St. Johns, Que.
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WHEELS, emery

*Canadian Hart Wheels, Ltd., Hamilton, Ont.

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WHEELS, turbine, water

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*The Steel Company of Canada, Ltd., Hamilton.

WROUGHT PIPE

*The Steel Company of Canada, Ltd., Hamilton.

YARNS, cotton

Hamilton Cotton Co., Hamilton, Ont.

ZINC, electrical

*The Canada Metal Co., Toronto.

* For Display Advertisement See Index Page 785

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A GOOD Covering pays for itself in one Season, and is a revenue producer indefinitely.
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EUREKA MINERAL WOOL & ASBESTOS COMPANY
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An Appreciation of Which We are Proud

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Toronto.

"As you had a good deal to do with the advertising campaign, I am sure you will be glad to have Sir Robert's commendation as quoted from his letter of November 17th :—

"I have not had an opportunity of telling you how greatly interested I was in seeing the samples of your literature and posters. They are most telling and effective, and are a pattern to anyone who proposes to run a campaign for the Red Cross. I congratulate you and all who have been concerned in introducing such effective propaganda."

"Yours faithfully,

"(Signed) B. J. ROBERTS,
"Assistant Secretary."

J. J. GIBBONS, LIMITED

General Advertising Agents

MONTREAL
Cables—Gibjay, Toronto

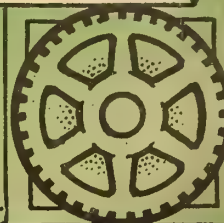
TORONTO

WINNIPEG
Codes—ABC, 5th Edition



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HEAD OFFICE BRANCH OFFICES,

• TORONTO • MONTREAL, HAMILTON, WINNIPEG, VANCOUVER, HALIFAX, QUEBEC.



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ROUNDS, SQUARES, FLATS, ANGLES AND SPECIAL
SECTIONS FOR AGRICULTURAL IMPLEMENTS

Prompt Shipment from Stock

BURLINGTON STEEL CO., Ltd.

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We have erected and are now operating

THE LARGEST COMMERCIAL DROP FORGE PLANT IN CANADA

We are equipped to handle large forging contracts.
This expansion also increases our stamping facilities.
We stand by our Motto: Quality and Service.

SHEET METAL WORK

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Walkerville - Ontario

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Superior quality, differs from all others, gives greatest mileage. Sold in Tank Cars, Drums and Barrels, also by Tank Wagon.

BRITISH MOTOR GASOLENE

Not equal to Peerless in volatility or staying powers, but so good that many customers never ask for better. Sold in Tank Cars, Drums and Barrels, also by Tank Wagon.

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A Lubricant perfect in all its requirements for use in all Ford Cars. Sold in Barrels, ½ Barrels, Cans and Tins. Special Lithographed Tins made to go under seat of Cars.

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That is why you get the gratifying results and economy in using Dart union pipe couplings. It's our only line of manufacture and every effort goes to make them as near perfect as they can be made.

Twenty-five consecutive years devoted to one single item. It is little wonder the result is such a good union.

SPECIFY

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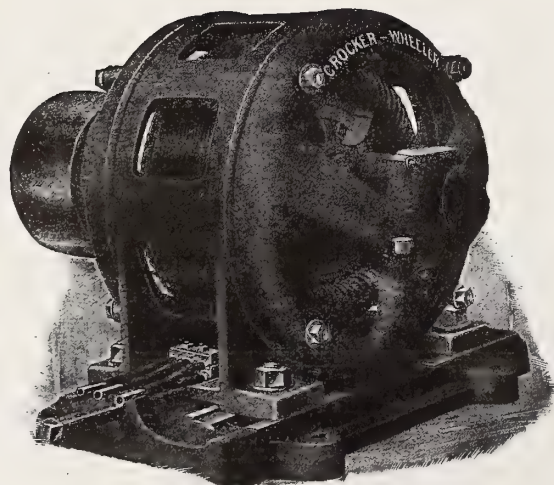
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For Buyers' Guide see page 973



THE DESIGN OF CROCKER-WHEELER INDUCTION MOTORS

INCLUDES:

Heavy Shafts

Large Journals

High Power Factor

Excellent Efficiency

They have many other desirable features;

Bulletin 155 describes them.

THE CANADIAN CROCKER-WHEELER CO., Limited

MANUFACTURERS AND ELECTRICAL ENGINEERS

Head Office and Works: St. Catharines

District Offices: Montreal, Toronto, Vancouver

*The System
You've Been
Waiting
For*



A PRESTO-PHONE DESK SET

The Presto-Phone

Prevents Delay and Confusion

It enables you, as an executive, to get into instant touch with any man in any department of the plant, thus giving you a greater control over the affairs under your responsible direction.

No Central Operator Required

The Presto-Phone is automatic—merely a matter of "touch the button" and the department desired quickly answers. Consider the economy of this in the saving of delay, confusion and worry!

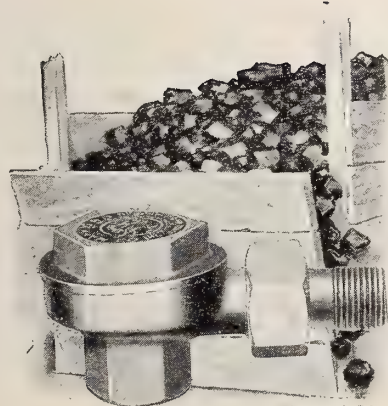
This is a Canadian invention, made in a Canadian factory, that gives better service than any foreign-made system devoted to a similar purpose. By installing the Presto-Phone you encourage a Canadian industry whilst getting the very best value for the money expended.

Booklet Mailed on Request

**Canadian Independent
Telephone Co., Limited**

263 Adelaide St. West

TORONTO



The Check on the Coal Bin

The DUNHAM

VACUUM HEATING SYSTEM

With coal prices taking the aeroplane route and hard to secure, don't you think it time to discover where this valuable article can be saved?

Most amazing fuel wastes are allowed in Heating Systems using high pressure steam when the same equipment could be converted into a safer—surer—economical and satisfactory heating system at a moderate outlay. Your heating system may be giving no end of trouble with faulty return devices and wasteful, dirty air valves on the radiator.

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Let us hear from you about Heating in any branch, and we will send you some interesting information.

C. A. DUNHAM CO., Limited, Toronto, Canada

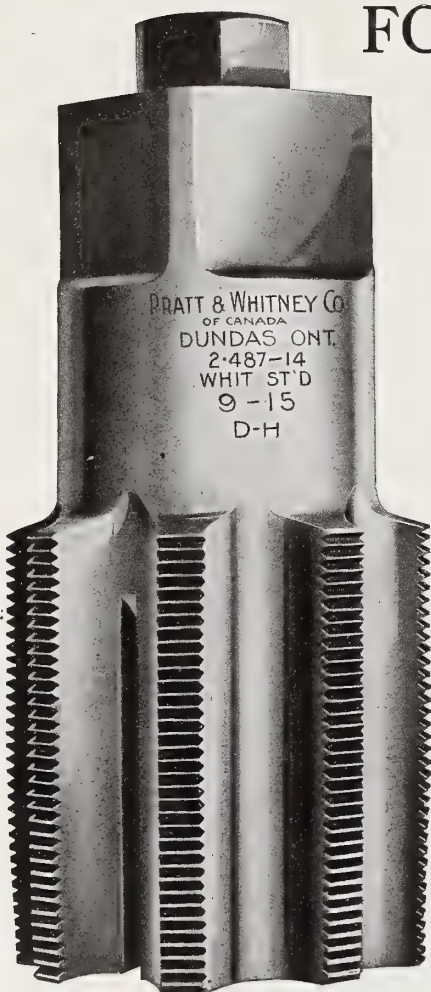
OTTAWA—214 Booth Building
MONTREAL—Room 10, 11 St. Sacramento Street

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WINNIPEG—405 Tribune Building

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FOR Shrapnel and
H.E. Shells



ON hard, tough shell steel, solid taps are too expensive as the excessive wear quickly puts them below gauge size.

The simple adjustment on the tap, shown in our cut, was gotten out to overcome the effect of this excessive wear and to provide an economical substitute for the expensive chaser tap.

The accuracy to size and form is easily maintained and the life of the tool prolonged far beyond that of a solid tap at a comparatively small advance in price.

We can supply them for all tapping operations on Shrapnel and H.E. shells to 4.5" diameter.

Ask for our list and prices of Shell Tools
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If you have not received our No. 8 catalogue yet, we have one for you.

PRATT & WHITNEY CO.
of Canada, Limited
Dundas : Ontario

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723 Drummond Bldg.

WINNIPEG
1205 McArthur Bldg.

VANCOUVER
609 Bank of Ottawa Bldg.



LATHES and Attachments

for the manufacture of—

This Equipment is
all New, Modern
and Heavy

Write or wire our
nearest office for
particulars

EARLY DELIVERY

6", 8"
and
9.2
HIGH
EXPLOSIVE
SHELLS

THE JOHN BERTRAM & SONS CO.
LIMITED

DUNDAS, ONTARIO, CANADA

MONTREAL
723 Drummond Bldg.

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Reduce That High Cost of Finishing

Sand practically any curved or irregular surface at machine speed. Eliminate most all of your expensive hand sanding. Apply machine production to a class of work that has heretofore held back the output of your factory.

The Flexible Belt Sander

has adjustable standards. Belt can be made long enough to give any desired flexibility. Enables the operator to reach all crannies and hollows. Quality of work limited only by operator's skill. As quick and willing as a "two-year-old colt." Simple as "two times two." Any shop hand can operate it on irregular surfaces, flat stock, general "clean-up" service, or on special articles by using one of the many jigs

that can be furnished. ¶ You'll never *fully* realize what a difference in your profit and loss account one machine will make until you've seen the sample we'll sand for you free, and have read our circular.

Send us that sample and your request for circular 427, telling how it

Does the Trick

P. B. Yates Machine Co. Ltd.

HAMILTON, ONT. CANADA

Successor to THE BERLIN MACHINE WORKS, U.S. Plant, Beloit, Wis.



THE NATIONAL-ACME Manufacturing Company

MAKERS of Special
Screw Machine
Products from bar
stock. Also Standard
Screws, Nuts, Studs
and Hexagon Brass
Nuts at

MONTREAL, P.Q.
De Courcelles & G.T.R., St. Henri



CUT GEARS

CUT
GEARS



We can supply that Rawhide
Pinion you want rush—
The Rough Blanks are in stock
here up to 12" diam.

Write us for Quotations.

Hamilton Gear & Machine Co.

COR. CONCORD
& VAN HORNE

TORONTO

Premier Gasoline

MORE MILES PER GALLON

Experienced motorists know the value of getting, not merely good fuel, but the same fuel every time the tank is filled.

Premier Motor Gasoline is a homogeneous, uniform refinery product—the same wherever you buy it.

Polarine Motor Oil—the lubricant that never thickens from cold.

THE IMPERIAL OIL COMPANY
Limited

BRANCHES IN ALL CITIES

MADE-IN-CANADA

Toronto, Ontario

Mr. Manufacturer:—

Are you sincere in your desire to boost and make greater the British Empire by the buying of Canadian made goods? If so, look over the following list of high-grade oils, greases, compounds and paints manufactured in our oil refinery at Petrolia and our paint works at Toronto, Ontario. A postal card from you will bring you full information regarding the goods in which you are interested.

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MACHINE OIL

DYNAMO OIL

TANNER'S OIL

BLACK
LEATHER OIL

PARAFFINE
WAX

MINERAL
SOAP STOCK

BENZINE

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READY MIXED
PAINT

COLORS IN
OIL

VARNISHES

BLACK
JAPANS

STEEL BRIDGE
PAINTS

ROOFING
PAINTS

CUP GREASE

LINSEED OIL
SOAP





"The only Galvanized Sheets Made-in-Canada, and the Best made anywhere."

REGARDLESS

of your past sources of supply of Galvanized Sheets, you will be making a serious mistake if you fail now to find out all about CANADA'S OWN and only Galvanized Sheets, of which 15,000 tons have been made and shipped to the entire satisfaction of the buyer.

The Dominion Sheet Metal Co.
Limited

Hamilton

Ontario

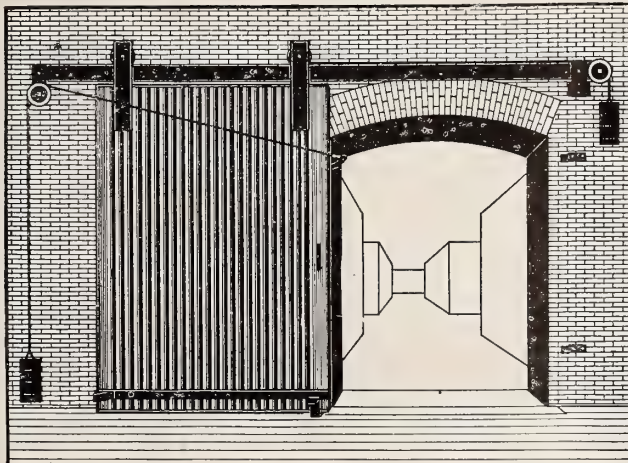
Tested to 500 Degrees Above Conflagration Point

Don't only *hope* your fire doors will stand the strain when the test of fire strikes your plant or building; instal Pedlar's Saino Fire Doors and be *sure* of it.

Your building may not be put to the same severe and

exhaustive tests to which Pedlar's Fire Doors have been subjected, but it is satisfying to know that in Pedlar's Saino Fire Doors you have protection that has safely withstood 500 degrees greater than conflagration heat.

PEDLAR'S Saino SHEET METAL FIRE DOOR



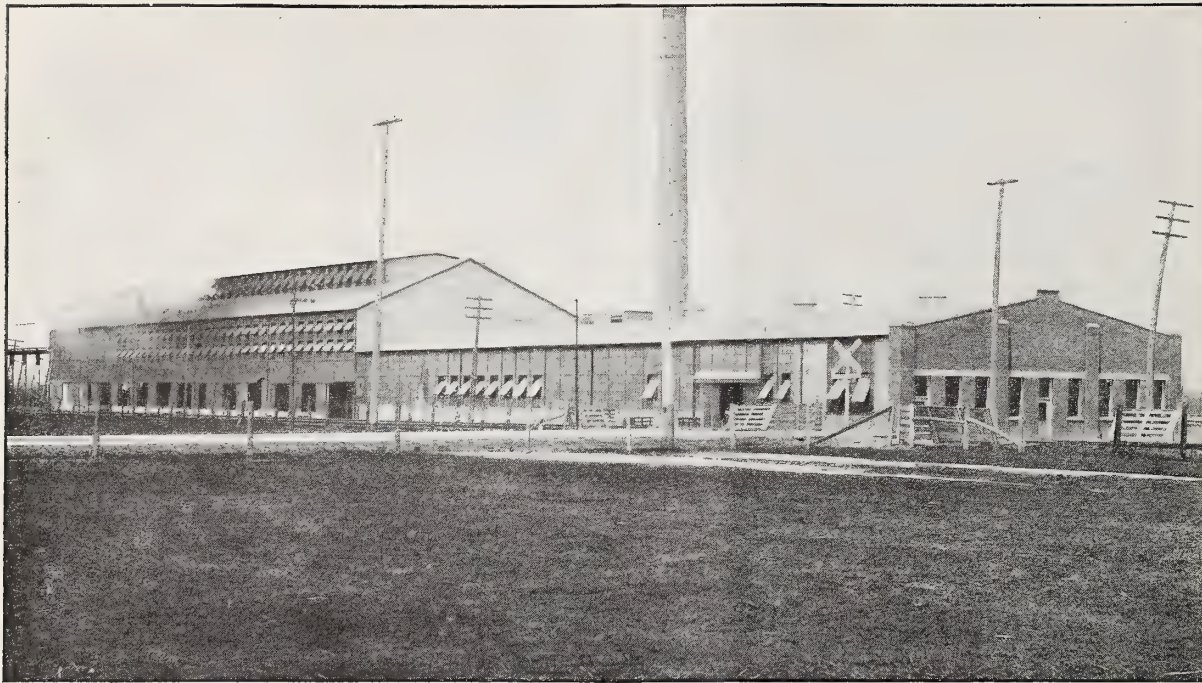
is made of two walls of cross-lined 22-gauge galvanized corrugated steel, with air chambers and interlined with heavy asbestos. Patent telescopic channels and joints provide for expansion and contraction along straight lines without distorting door. Made in all sizes and styles.

When you consider that the initial cost of Pedlar's Saino Fire Doors is no greater than less durable and protective doors, and that maintenance cost is done away with entirely, you get some idea of its safety and economy. And besides Pedlar's Fire Doors take the base rate of insurance.

Your Architect and Contractor Will Recommend Pedlar's Saino Fire Door. Ask them.

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VENTILATORS

Pat. Aug. 1911—Number 134928

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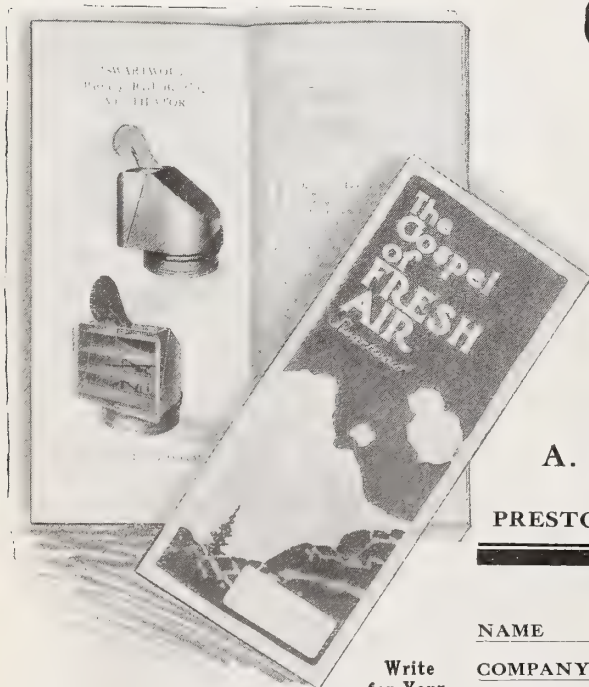
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OUR PART and OUR POLICY

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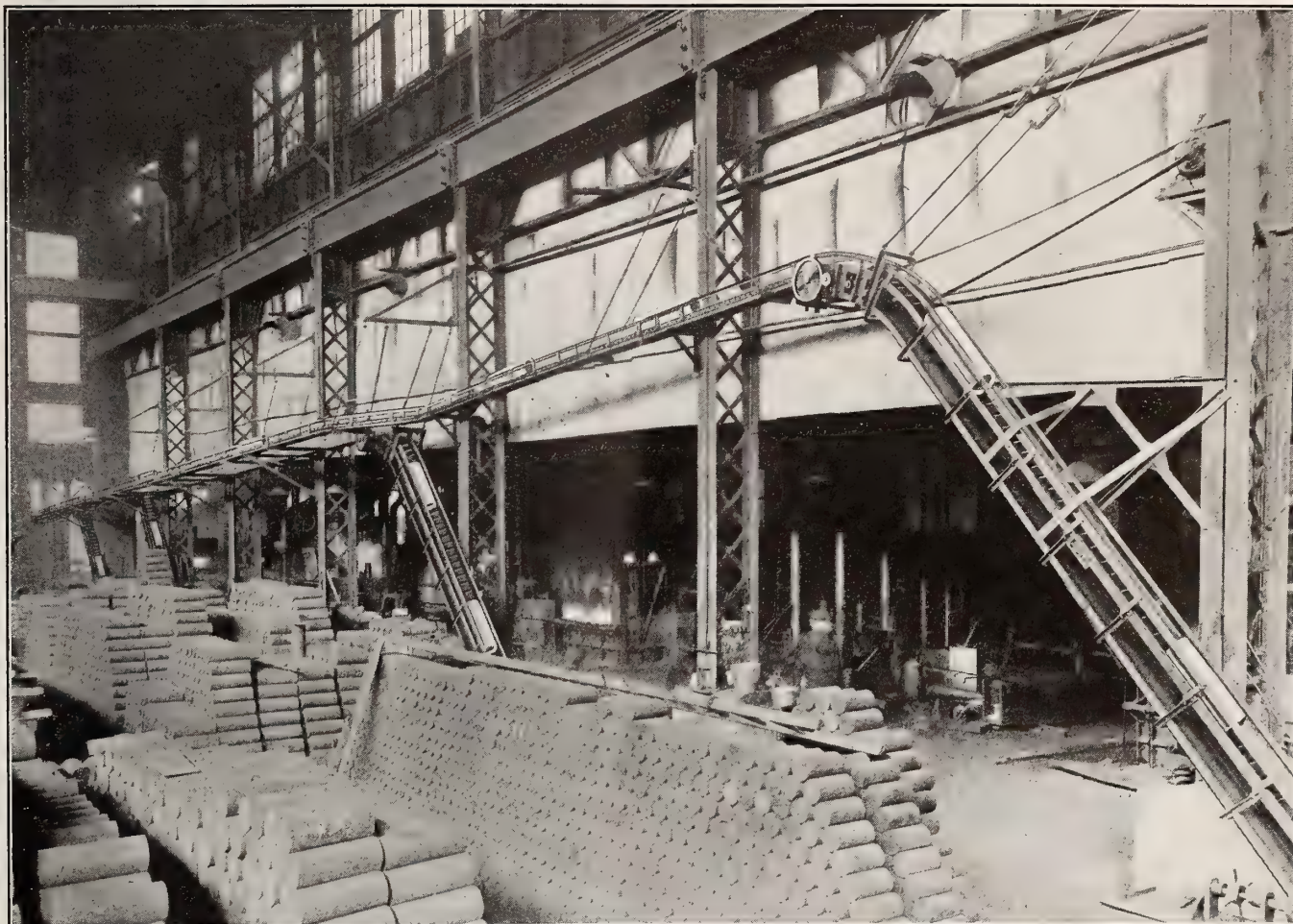
THE FOUNDATION COMPANY LIMITED

ENGINEERS - CONTRACTORS

MONTREAL

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ATTENTION, MANUFACTURERS



Shell Conveyor Device in Plant of P. Lyall & Sons Construction Co., Montreal

¶ The scarcity of labor deals directly with the manufacturer.

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A SUPERINTENDENT WRITES :

Oshawa, Ont., March 30th, 1916.

Galt Foundry Co.,
Galt, Ont.

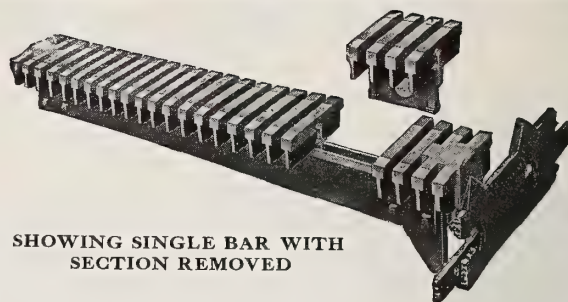
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(Signature).....

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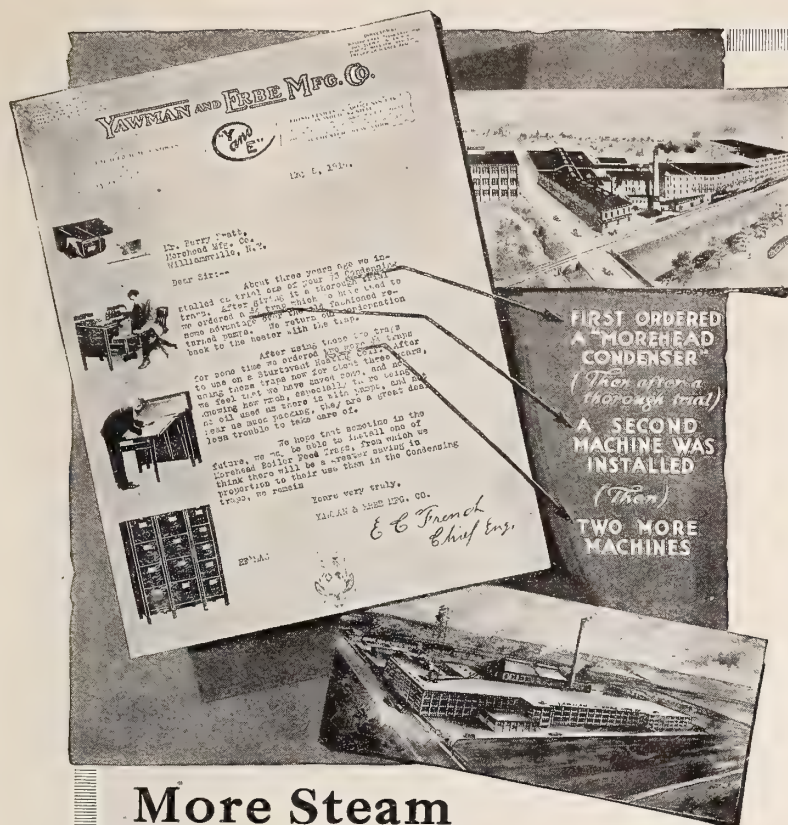
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The new Back-to-Boiler book describes the methods through which the Packard Motor Co., the Diamond Crystal Salt Co., and many more carefully managed corporations are actually getting more steam for less coal.

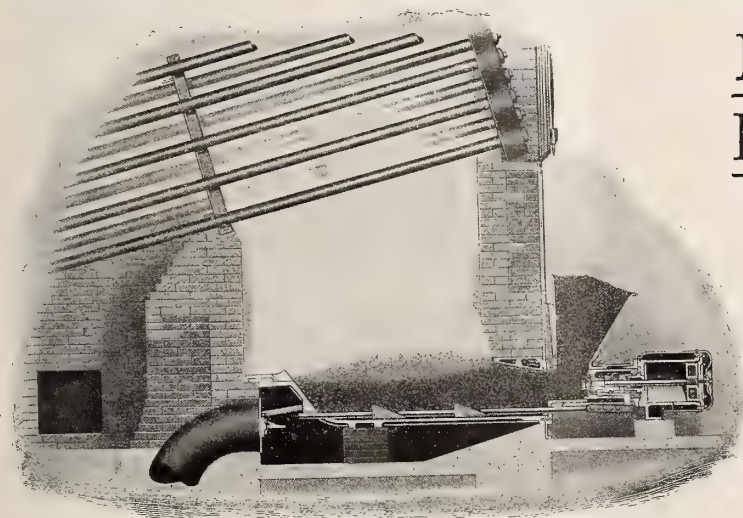
For your copy—with its sixty-two pages of interesting pictures and data—simply address

Canadian Morehead Mfg. Co.

Dept. " K "

WOODSTOCK, ONTARIO

387



Modern Method In Boiler - Firing

There's a method that will effect a saving in fuel consumption running from 15 to 25 per cent., a method that has been tried and tested and found perfect for years in the great plants where the savings run into big figures annually as well as in the smaller plants. That method is the

JONES UNDERFEED STOKER

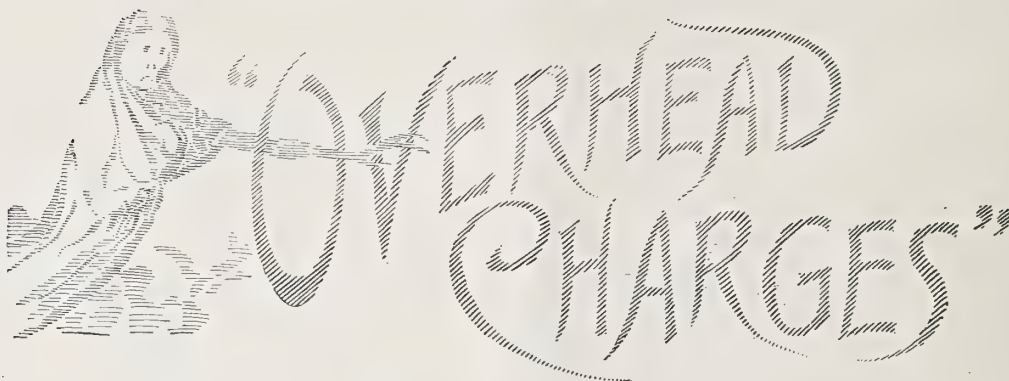
The superiority of the Jones Stoker lies in its simplicity of design and absolute reliability of operation. Once installed, your boiler-firing troubles are ended, and your engineer will give you the results you expect of him.

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WRITE FOR IT TO-DAY

Jones Underfeed Stoker Company, Limited
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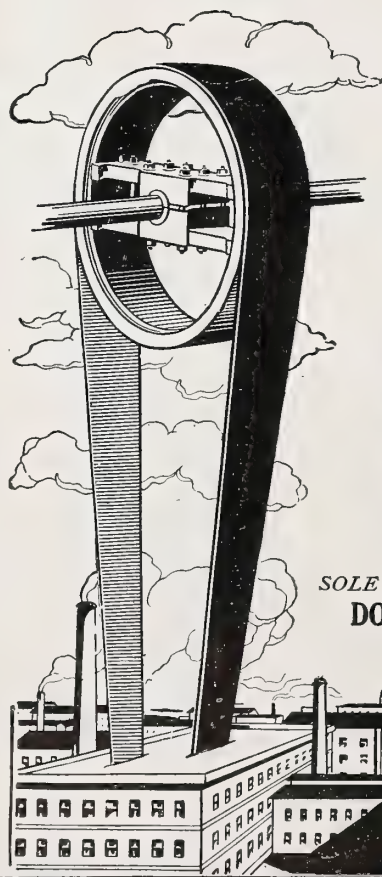
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Actual scientific tests show that on the average you can buy *four* Dodge Wood Split Pulleys with the money you now lose by waste from one Metal Pulley. Therefore we appeal to Presidents of Companies, Managers and Superintendents of Factories, Engineers and others, to personally supervise the buying of their pulleys and specify always—



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management of the new company; and no new capital has
been taken into the business. We are now in a better
position than heretofore to handle your requirements
in the promptest and most efficient manner.

We wish to thank you for your kind
patronage in the past, and to express the wish that
our connection may continue to be of a cordial nature;
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Yours very truly,

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A. R. WHITTALL, President.
D.S. WHITTALL, Vice-Pres.
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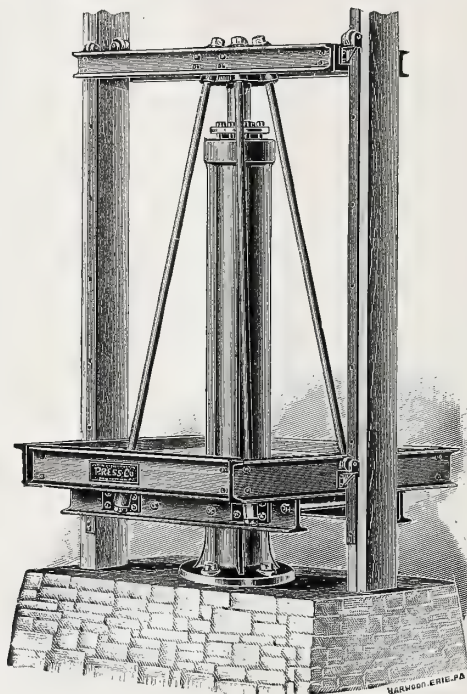
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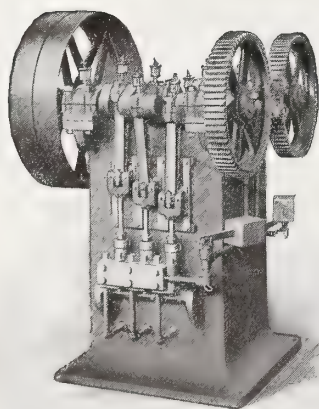
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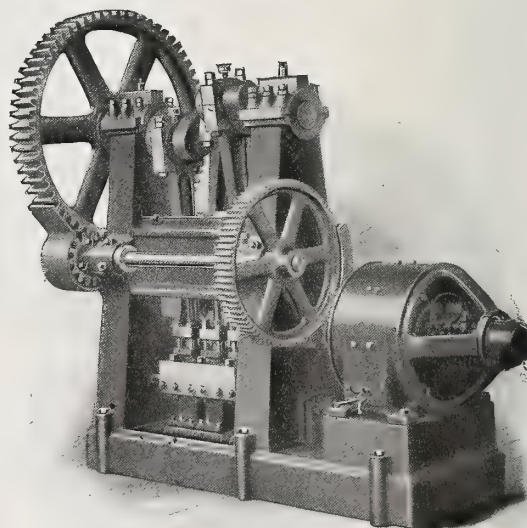
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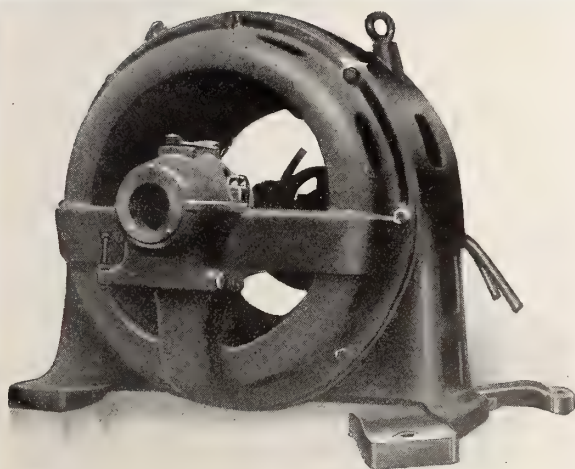
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MONTREAL - CANADA

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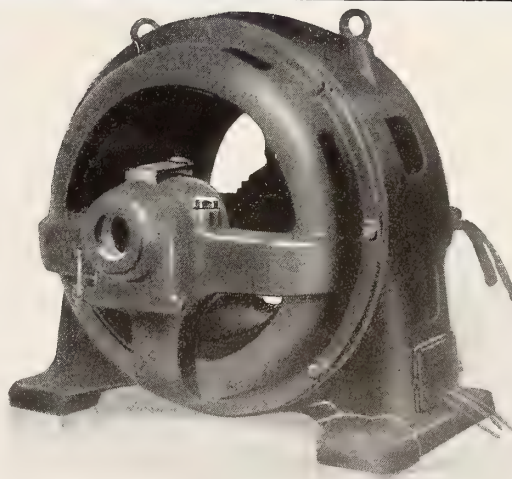
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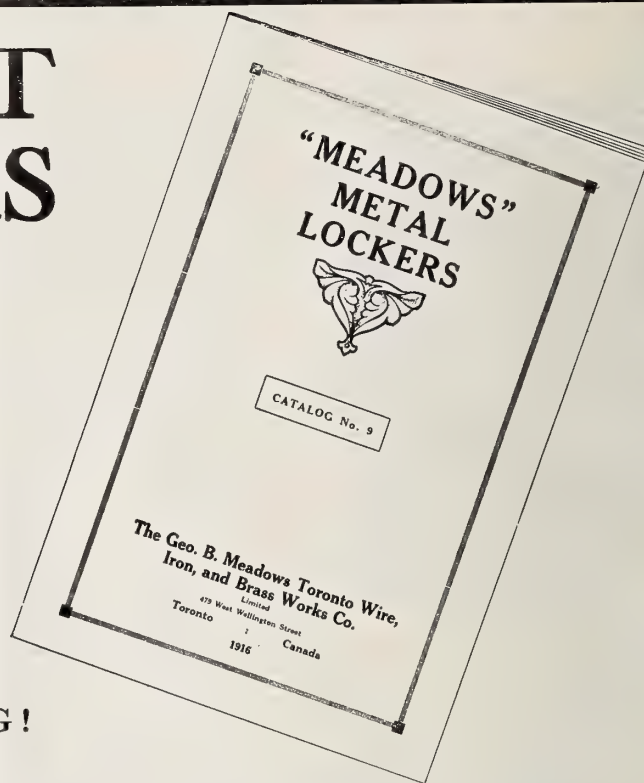
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ESTABLISHED 1817

Capital Paid Up	-	-	\$ 16,000,000
Reserve Fund	-	-	- 16,000,000
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Total Assets	-	-	365,215,541

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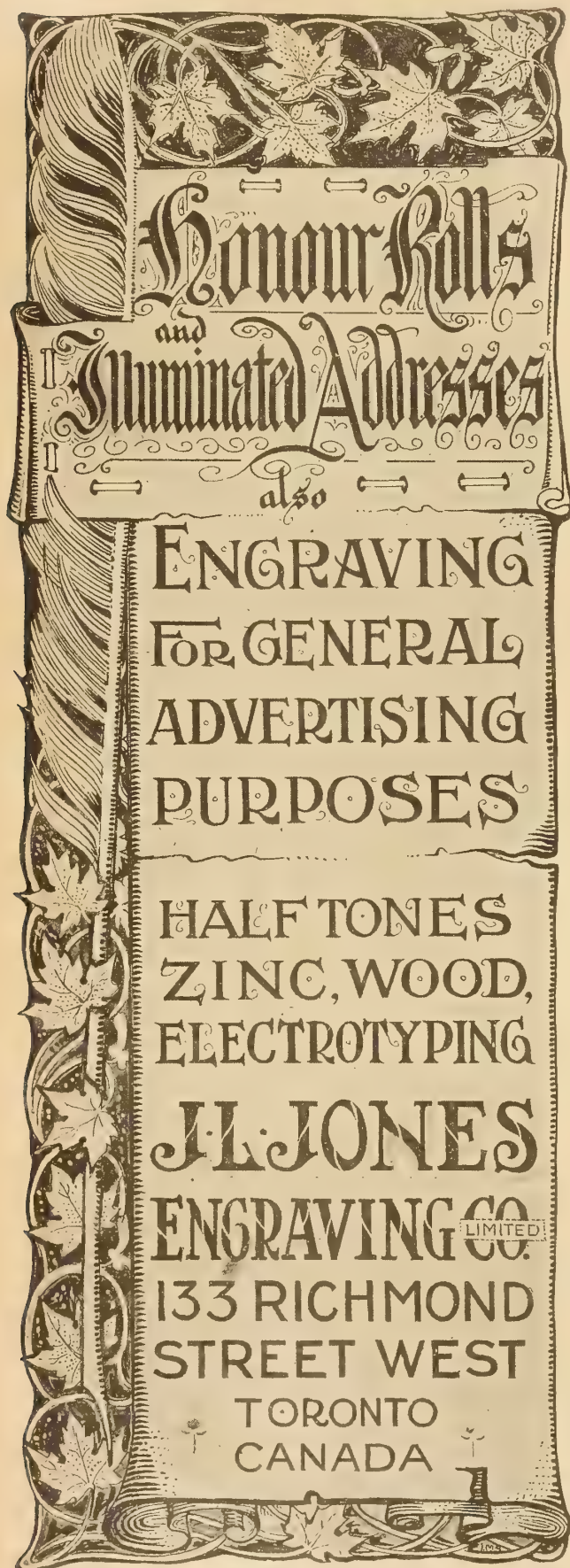
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TO STATIONARY AND HOISTING ENGINEERS

Everyone operating a STATIONARY steam plant of 50 h.p. or over in the Province of Ontario must hold a Stationary Engineer's Certificate from the Board of Stationary and Hoisting Engineers. Anyone operating such a plant without a Certificate is liable to the penalties set forth in the Stationary and Hoisting Engineers' Act.

Everyone operating a HOISTING steam plant working at a pressure of 20 pounds or over irrespective of horse power, and used for hoisting in structural operations or excavating purposes, in the Province of Ontario, must hold a Hoisting Engineer's Certificate from the Board of Stationary and Hoisting Engineers. Anyone operating such a plant without a Certificate is liable to the penalties set forth in the Stationary and Hoisting Engineers' Act.

Application forms for obtaining STATIONARY or HOISTING Engineers' Certificates, may be had upon applying to the Chairman.

HON. F. G. MACDIARMID,
Minister of Public Works and Highways.

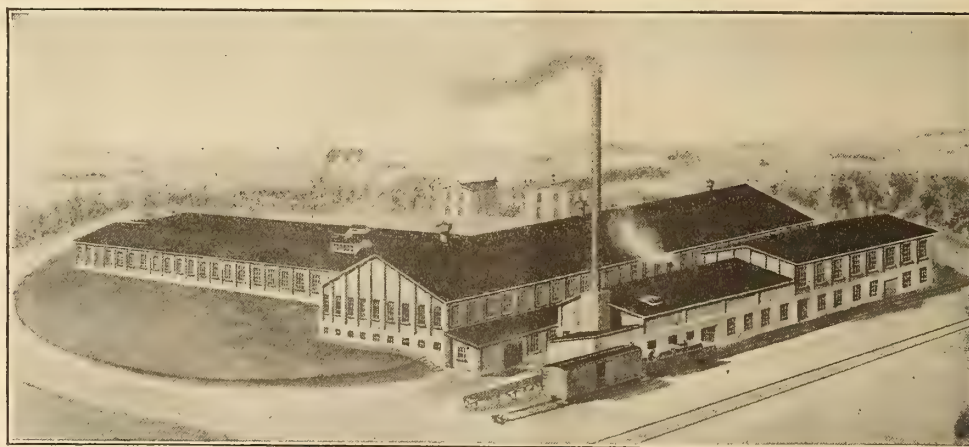
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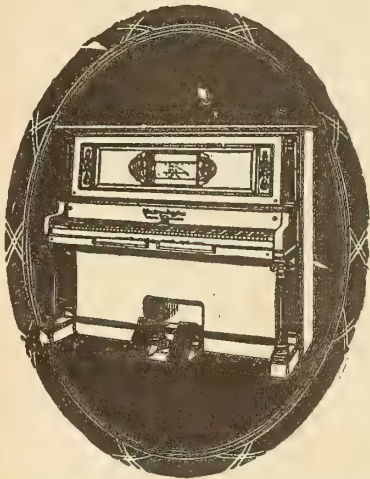
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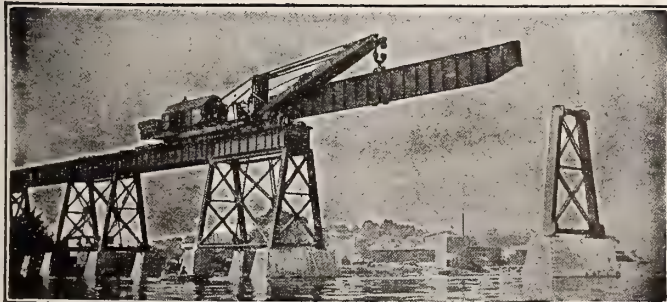
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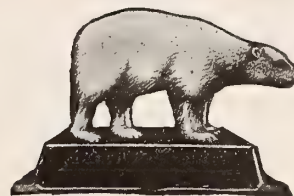
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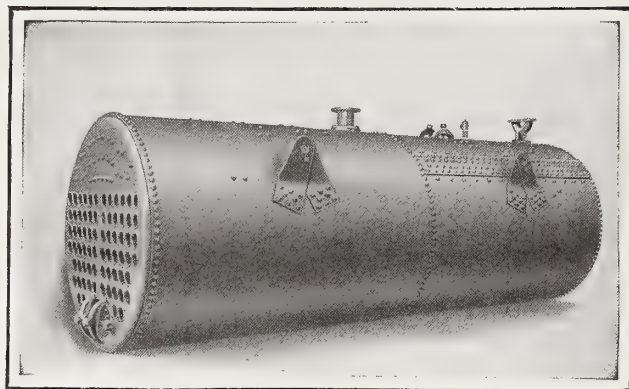
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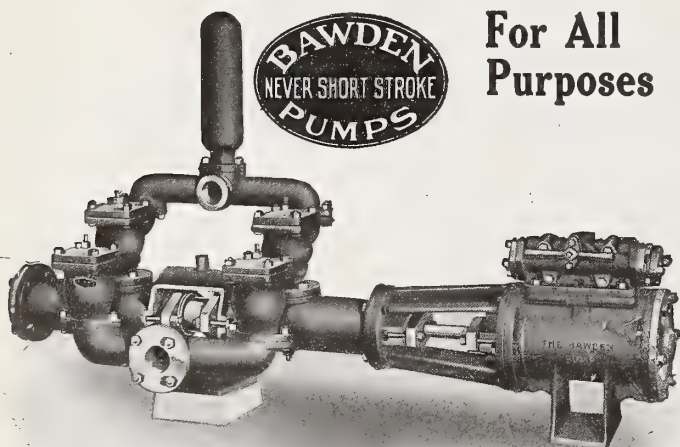
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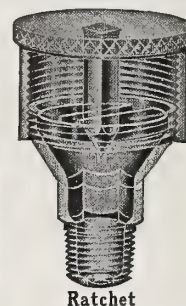
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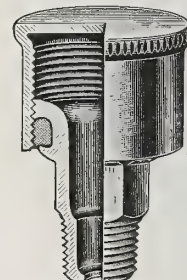


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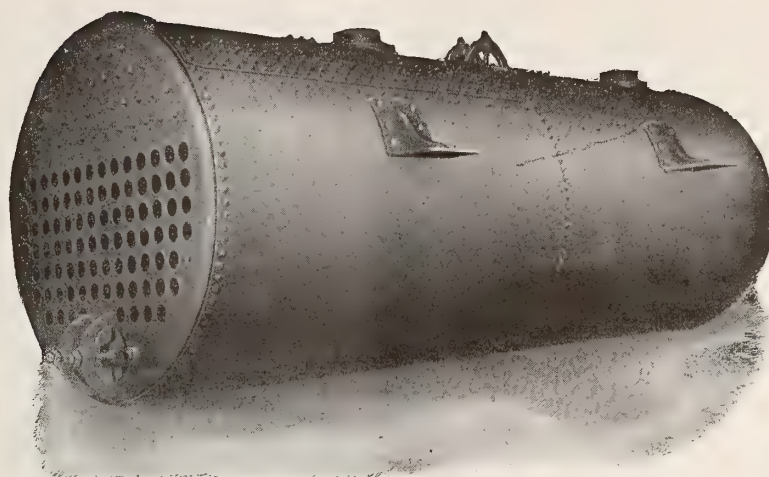
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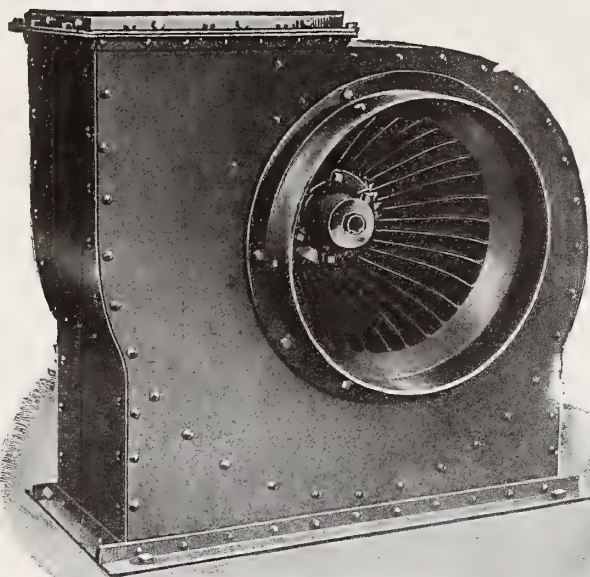
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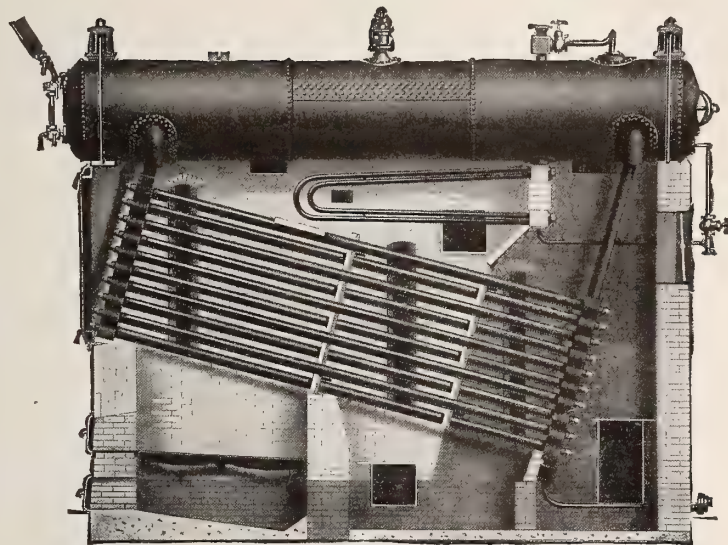
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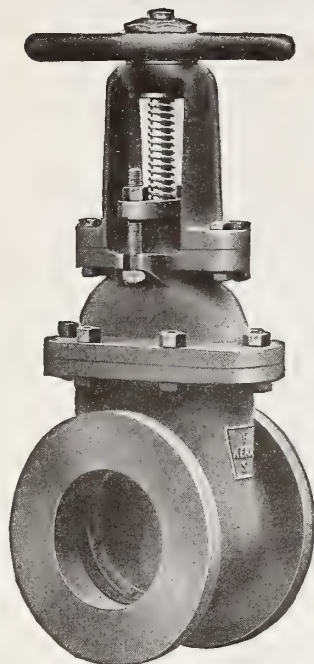
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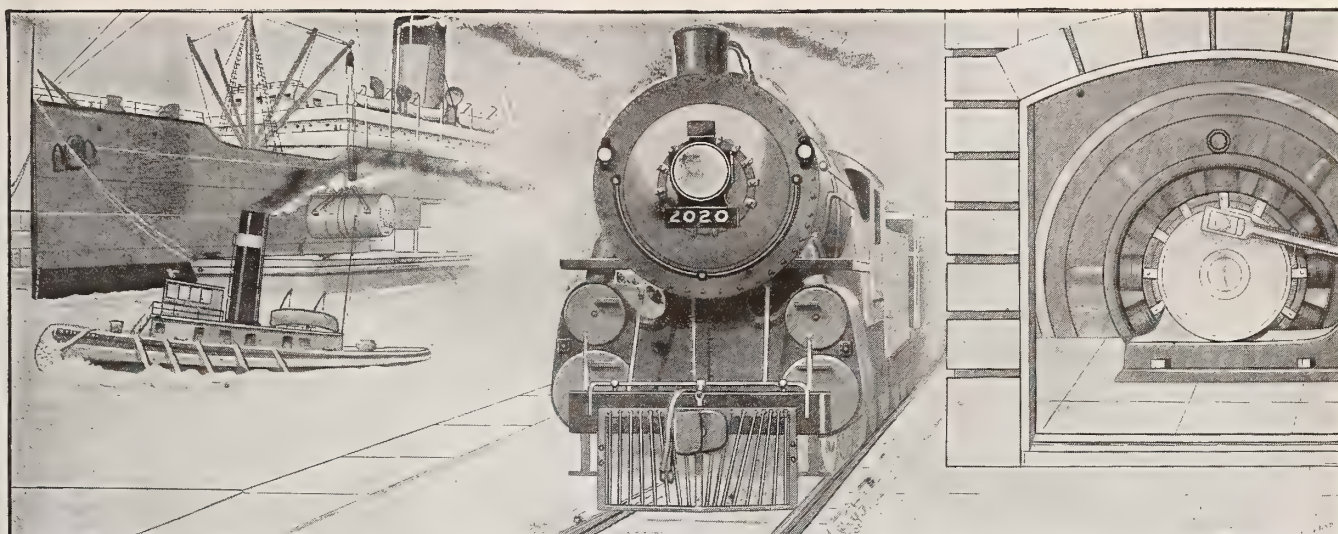
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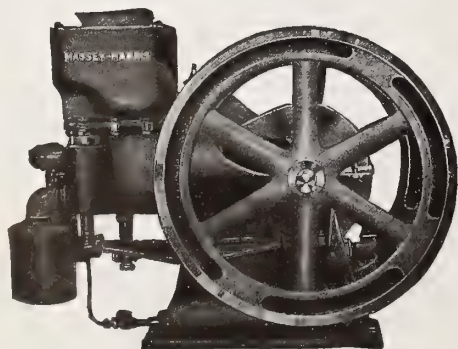
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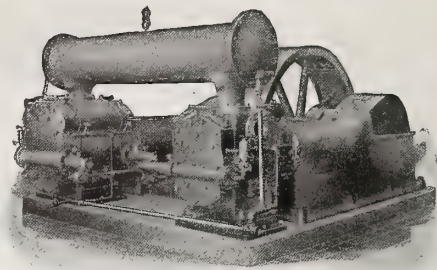
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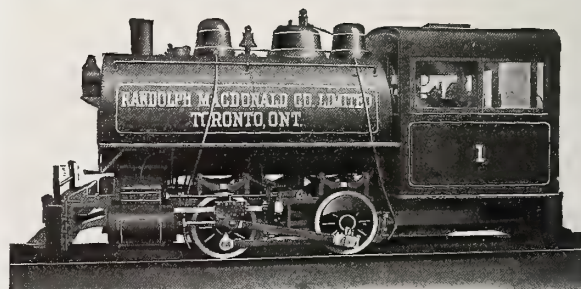
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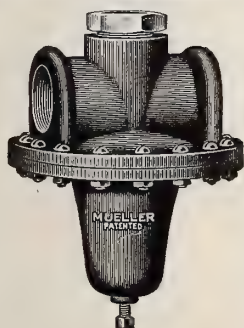
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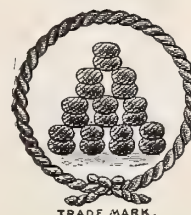
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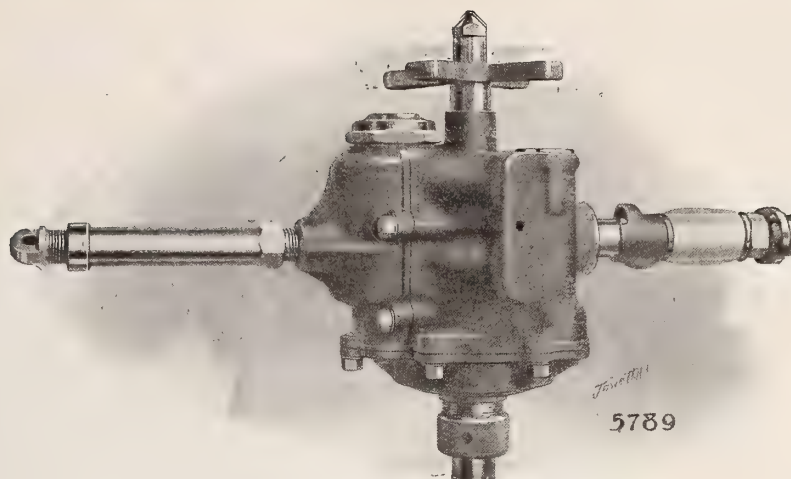
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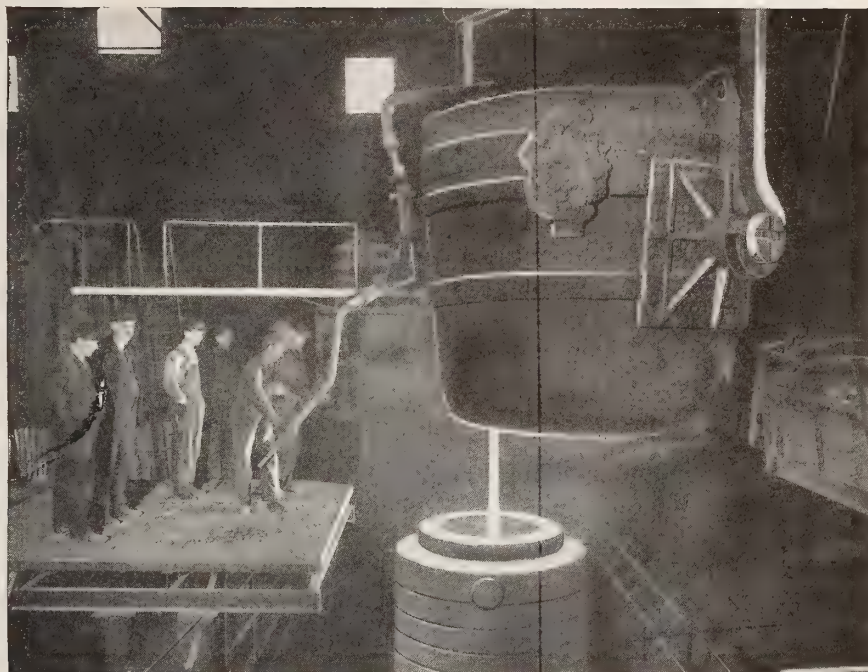
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THE leader in every industry, to maintain his lead, must safeguard the quality of his products.—Rigid inspection and careful supervision are important factors.—To products of iron and steel this principle applies with tremendous force.—It means safety, security and stability.—We safeguard the quality of our products, believing quality will be recognized long after the price is forgotten.

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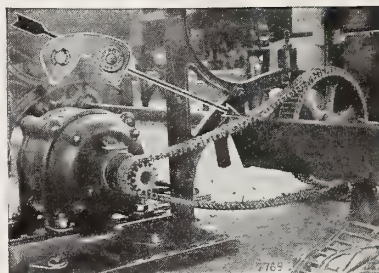
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Link-Belt Silent Chain

Simplifies Power Transmissions

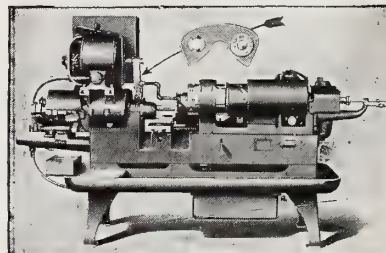
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short centres are easily secured. Link-Belt Silent Chain is positive in action in hot, cold, damp or oily places.

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Look for the Name on the Washers : Look for the Liners in the Joints

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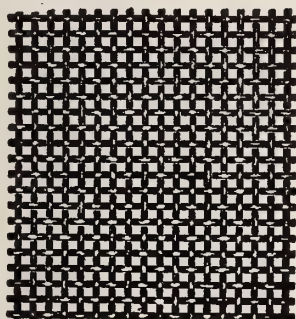
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Work in all finishes.**

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THERE will be no trouble here from dampness getting into this cellar wall. I am applying a coating that will keep it as tight as a drum. It is the best material I know of, and it is called—

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CEMENT**

R. I. W. Marine Cement is applied from footings to grade level of brick, stone and concrete foundation walls. Very successfully used on the McKinley Memorial Monument at Canton, Ohio.

When wood flooring is to be laid over cinder concrete the sleepers and under side of the flooring should be coated with R. I. W. Trimbak, followed by R. I. W. Marine Cement over the concrete and sleepers before the flooring is laid.

Applied cold with a brush or swab.

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There's reason as well as rhyme in this assertion. Because Economy Renewable Cartridge Fuses will save you easily 80% of your fuse costs. Some saving, isn't it?—and well worth while for any concern.

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for Catalog 40—State capacity and voltage needed and we will also send you FREE samples.

Made in Canada by

Economy Fuse & Mfg. Co. of Canada, Limited
UNITY BUILDING, MONTREAL

Manufacturers in Canada of "S & C" High Potential Fuses—to 150,000 Volts

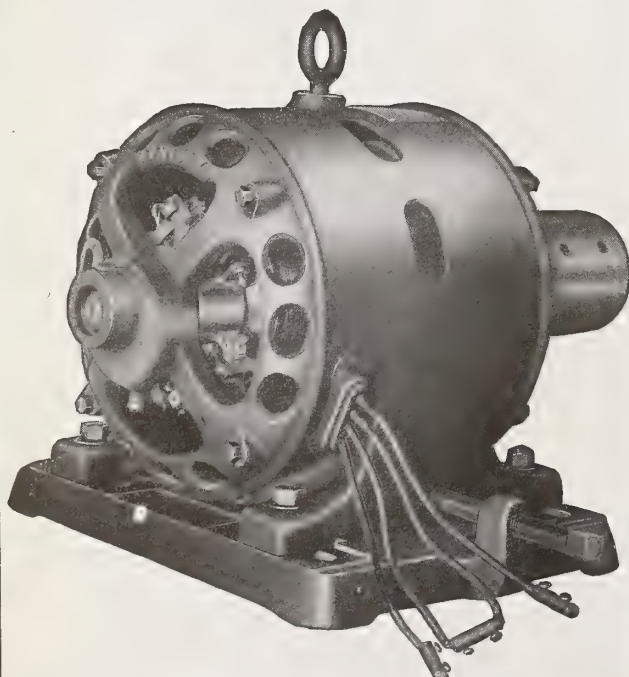
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Jones & Moore Electric Co.

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FOR SALE The Following Second-hand MOTORS in Good Order :

3 phase, 60 cycle, 220 volts

No.	H.P.	Speed.	Make.	Type
1	50	850	Westinghouse	CCL
1	40	850	Westinghouse	CCL
2	30	1120	Westinghouse	CCL
1	20	1120	Westinghouse	CCL
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1	7½	1800	Westinghouse	CCL
2	5	1800	T. & H. Elec. Co.	New
2	1	1800	Westinghouse	CCL

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2	40	850	Westinghouse	CCL
4	30	1120	Westinghouse	CCL
1	30	850	Westinghouse	CCL
1	20	850	Westinghouse	CCL
5	20	1120	Westinghouse	CCL
1	15	1120	Westinghouse	CCL
11	10	1120	Westinghouse	CCL
2	10	1800	Can. General Elec.	
1	10	1800	Tor. & Ham. Elec.	
2	7½	1800	Westinghouse	CCL
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1	Auto Starter—new—C.G.E., 220 volts, 60 cycle, 3 phase.			

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60 cycles, 2200 primary, 220 volt, Secondary.

4	25 k.w.	Westinghouse.
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HAMILTON - ONTARIO

Are You "On the Map"?

For instance, take gloves—

Just ask any man, woman or child you meet on the street what make of gloves they know of—or wear—

What answer will they give?

They will mention, one, two or three names—all of *foreign* firms.

Why do they mention and *BUY* these gloves?

There are several manufacturers in Canada making as good or even better gloves.

But the public doesn't know it—perhaps YOU don't know it.

WHY—Write me and let me tell you.

F. Albany Rowlatt

PUBLICITY SPECIALIST



Worse than race suicide is the failure of most manufacturers of Canada to let their own Country know they are "on the map."

*This applies to
Canadian Manufacturers
of almost any line.*

STOP
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LOOK
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LEARN
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To Secure Best Results in Oxy-Acetylene Welding and Cutting

Every owner of an Oxy-Acetylene Welding or Cutting Plant should appreciate the necessity of using carbide of uniform high quality because it produces pure acetylene—economically.

Every welder knows the importance of using the best carbide because it means better and quicker work.

Purchasers can know they have acted wisely when buying

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Results based on direct comparisons show that, pound for pound, Imperial Carbide produces more and better gas than any other carbide.

This is not a matter of conjecture, it is a matter of fact, based on close comparisons and careful analysis of results.

We invite such comparisons, as it is very convincing evidence that Imperial Carbide means economy in the cost of acetylene.

In addition to comparative results secured, we ask you to judge Imperial Carbide on the basis of these facts:

Imperial Carbide is made in the newest, largest and best equipped carbide plant in Canada—used exclusively for the manufacture of

Carbide. It is carefully screened, sized and inspected to eliminate all foreign substances.

During the process of manufacture it is subjected to tests which insure to the user a carbide that will give utmost efficiency.

Imperial Carbide is easily secured through our distributing warehouses, conveniently located throughout Canada

WRITE US AND WE WILL GLADLY FIGURE ON YOUR REQUIREMENTS

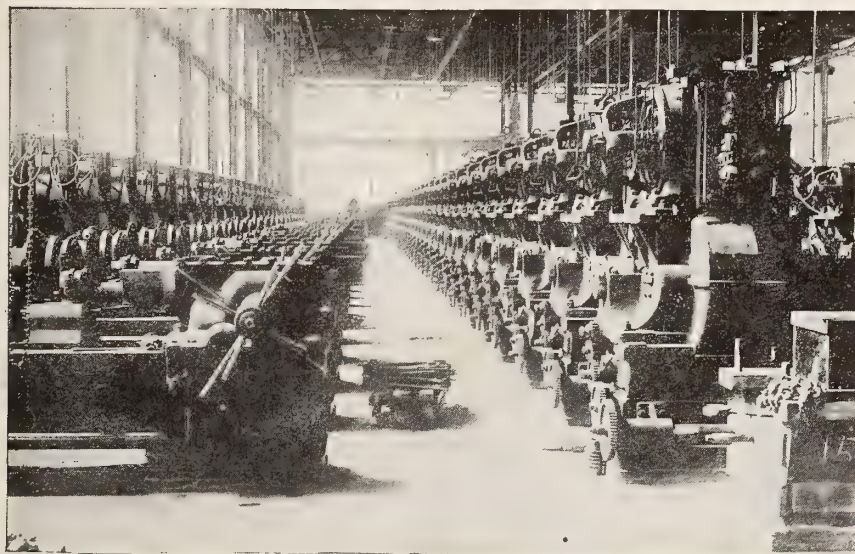
UNION CARBIDE CO. of CANADA, LIMITED

Head Office: Dominion Bank Bldg., Toronto

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Westinghouse

Direct-Current, Adjustable-Speed Motors



Westinghouse Adjustable-Speed Motors driving Shell-Making Lathes in a munition plant.

SPEED control of machine tools is greatly extended when Westinghouse Adjustable-Speed Motors are used.

Instead of the few steps obtainable with mechanical speed-changing devices, any desired number of steps, with any desired range of speeds, is provided.

With Westinghouse Adjustable-Speed Motors each machine can be pushed to its economical limit, no matter what the work in hand. Belt slippage being eliminated, a given speed is constantly sustained; it does not drop as the depth of the cut increases. All of which means increased production.

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Barrett Specification Roofs

Guaranteed for 20 Years

Made in Canada

We Standardized the Roofs— Now We Standardize the Guarantee!

A DOZEN years ago the introduction of The Barrett Specification standardized roofing practice throughout the Dominion and gave to the old "tar-and-gravel roof" a definite character and reliability.

Local contractors, in the past, have been accustomed to guaranteeing roofs of this type, free of repairs for from five to ten years.

To good reliable roofers such guarantees were no burden because the roof they constructed would last much longer than the guaranteed period.

The fly-by-night roofer, however, did a poor and cheap job, gave his guarantee recklessly—and was generally out of business when the roof leaked or trouble came.

As manufacturers of the materials used in Barrett Specification Roofs we, therefore, determined a short time ago to standardize these guarantees and make them of real value to users of Barrett Specification Roofs.

We, therefore, arranged with the U. S. Fidelity & Guaranty Company to issue a 20-Year Guaranty Bond covering every Barrett Specification Roof of 50 squares and over wherever our inspection service was available.

To-day this Guaranty and Inspection Service covers all towns of 25,000 population and over and most of the smaller places in the thickly populated parts of Canada and the United States. This means that only 5% of the population is outside the radius of our Guaranty.

This bond takes the place of short-term guarantees formerly issued by the local roofer and obviously is far better because :

—it is for 20 years (instead of the usual five or ten)

—it is backed by a \$15,000,000 Corporation

—it has the further backing of a great Surety Company

—it provides for an impartial expert inspection of the job

How to Get the 20-Year Guaranty

When you are writing your roofing specification say :

"The roof shall be a Barrett Specification Roof laid in accordance with The Barrett Specification, dated May 1, 1916, by a roofing contractor approved by The Barrett Company. The roofing contractor shall furnish The Barrett Company's Surety Bond Guaranty for twenty years, in accordance with Note 1 of said Specification."

On this solid and honest basis as many contractors as you desire may estimate on the job.

The winning contractor notifies us that he wishes the 20-Year Surety Bond and requests our Inspection Service.

One of our inspectors supervises the construction of the roof, tests it by cutting a cross-section, checks up the quantity and the quality of the materials used and certifies that The Barrett Specification has been strictly followed.

On the basis of the inspector's report the 20-Year Guaranty Bond is issued by the U. S. Fidelity and Guaranty Company, and the bond exempts the owner from all expense for repairs or maintenance for the next 20 years.

The Guaranty Bond costs you nothing. The service is free in the interest of good workmanship and the good repute of our materials.

While we guarantee Barrett Specification Roofs for only 20 years the chances are that they will last much longer.

We know of instances where this type of roof has lasted twice as long without any expense.

Barrett Specification Roofs are recognized to-day as the standard covering for permanent buildings of all kinds. The cost, per year of service, is less than any other roof covering.

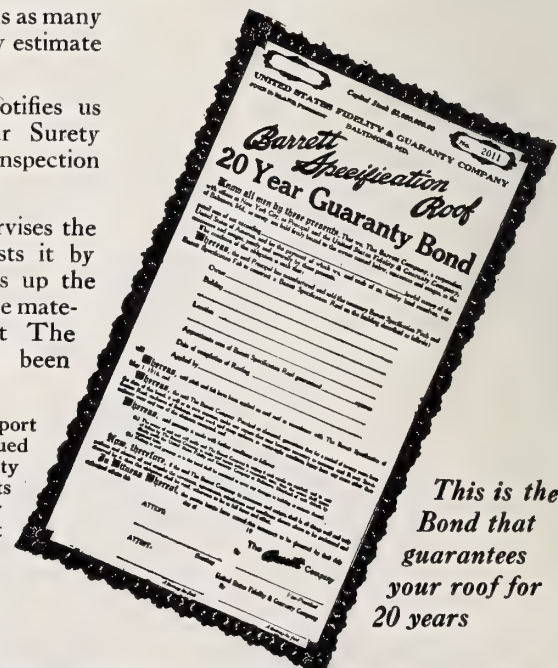
If you are interested in the proposition we shall be glad to send you further details on request.

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THE CARRITTE-PATERSON MANUFACTURING COMPANY LIMITED

ST. JOHN, N.B. HALIFAX, N.S. SYDNEY, N.S.



This is the
Bond that
guarantees
your roof for
20 years

INDUSTRIAL CANADA

ISSUED BY
The CANADIAN MANUFACTURERS ASSOCIATION.
INCORPORATED.

Vol. XVII.

TORONTO, DECEMBER, 1916

No. 87

INDUSTRIAL CANADA

Issued monthly as the official publication of the Canadian Manufacturers Association (incorporated), and devoted to the advancement of the industrial and commercial prosperity of Canada.

SUBSCRIPTION

Two Dollars per Year Single Copies 20 cents
Advertising Rates made known on application.

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More Ginger Needed.

THE resignation of Mr. Asquith and the elevation of Mr. Lloyd George to the premiership are said to be due to the activities of a set of English Parliamentarians known as the "Ginger Group," who, as the name would imply, favor a more aggressive policy in the conduct of the war.

The press despatches recently to hand lend color to the report, for among the reforms the new Prime Minister purposes to bring about are the suppression of all work immaterial to the war, the issuance of food tickets for the better control and distribution of food supplies, and the enlistment of men from occupations hitherto exempt. Concurrently with these reforms, the administration has been strengthened by dropping a few more lawyers from the Cabinet and putting tried business men in their places.

England provided herself with a coalition government at the outbreak of the war; Canada hasn't achieved that progress yet. England had conscription a year ago; Canada will make an appeal for voluntary national service on the first of January. England solved the munition labor problem long ago by enlisting her munition workers and bringing them under control and discipline; in Canada

thousands of dollars are being spent on newspaper advertising in an effort to alleviate the labor problem of the munition manufacturer by a short-sighted plan that will more likely add to his difficulties than lighten them. England long since took practical steps to enforce thrift; outside a couple of war loans, Canada so far has done nothing but talk. England has taxed every income in excess of \$600, in some cases the levy being over 50 per cent.; Canada is apparently satisfied to delegate the major portion of her share of the expense to posterity.

At Ottawa the Ginger Group is conspicuous by its absence. Suggestions pour in by the score, but in nearly every case a good excuse can be supplied why action is impracticable. Conscription is not to be thought of because of the large percentage of foreign born, and the enormous frontier that would have to be patrolled to prevent people leaving the country. The enlistment of munition workers as munition workers is unfeasible because the labor organizations might object. The high cost of living has to be handled with gloves because one of the prime causes is the high price of agricultural produce, such as wheat, milk, butter and eggs, and of course it would never do to antagonize the farmer. Unnecessary public works cannot be closed down because of a reason the censor might forbid us to mention.

Canada wants waking up, and wants it badly. The Government is to blame for not adopting measures that will force the people to realize the stern necessities of war; the people are to blame for threatening the Government with their displeasure if such measures are introduced. If the German commerce raider now said to be roving the Atlantic would only bombard a few of our ports, and if some Zeppelins would favor our inland points with the same kind of mementos they are accustomed to drop on England, their visits might easily prove a blessing in disguise. But as such intervention is not to be hoped for, apparently the only thing to do is to possess our souls in patience and trust to the slow-moving machinery that the National Service Board will provide.

A Shipbuilding Opportunity.

FOR years and years Canada has been "considering," in the governmental sense, the advisability of doing something to encourage shipbuilding on a large scale. Prior to the war the difficulties in the way were possibly of a

sufficiently serious character to warrant the Government's delay in announcing a policy. Some of those difficulties may still exist, but if Canada is ever going to develop a shipbuilding industry at all, she will never be able to commence under more favorable conditions than obtain to-day. Consequently the Government should make up its mind now whether it is going to move at all in the matter, and if so, how.

From August 1st, 1914, to August 1st, 1916, the world's ocean going tonnage was reduced by the destruction of 1,486 merchant vessels, aggregating 2,812,644 gross tons. Since then the submarine has taken a further toll that will probably bring the loss in tonnage up to 3,500,000. It is quite conceivable that before the war is brought to an end, the figures of tonnage destroyed may total up to five or six millions.

Meanwhile a certain amount of new tonnage is being supplied, but the rate of production is necessarily far below the rate of destruction, for the United Kingdom, ordinarily the greatest shipbuilder in the world, has more important duties to attend to. Far from keeping up with the wastage, the official returns show that the United Kingdom is not able to maintain anything like her average annual production before the war. The merchant tonnage launched in the United Kingdom in 1914 was nearly 1,700,000; in 1915 it was less than 650,000. This situation, coupled with the fact that the expansion of the world's commerce since the beginning of the century has called for a 10 per cent. increase in ocean going tonnage every year, clearly points to a demand for cargo vessels that will keep every shipyard in the world busily employed for some years to come.

The country that to-day is best able to increase its output of merchant tonnage is, of course, the United States. So far it has failed to profit by its opportunities as it might have done. In the next two years it will, no doubt, add very greatly to its tonnage, but the best contribution it can possibly make will be a small factor in overtaking the world shortage caused by the wastage of the war and the curtailment of production in other countries.

Canada can hardly hope to be much of a factor either. Even if she were to build fifty ships a year, of 2,000 tons each, for the next five years, she would be replacing only one-sixth of the tonnage de-

stroyed to date, and supplying probably less than one-twentieth of the shortage that will be felt when all restrictions on ocean traffic are lifted. But a contribution of even smaller proportions would mean a big thing for this country. Were Canada to carry out only half the programme mentioned she would be laying the foundation for a great and prosperous industry that would give lucrative employment to thousands of skilled workmen and make practicable the establishment of basic and subsidiary industries that would still further contribute to our national prosperity.

The important thing to remember is that for some years to come Canada is sure of a profitable market for all the ships she can build. Capital will naturally be attracted by the opportunity, and we may look with certainty for some sort of beginning to be made. But capital cannot afford to close its eyes to the fact that a time will come when it will no longer be a question with shippers where they can get a vessel, but at how low a price a builder is willing to supply one. When that time comes, Canadian shipyards will be unable to compete with the shipyards of the United Kingdom, with their cheaper labor, cheaper materials and higher specialization, unless some form of governmental assistance is forthcoming to equalize differences in cost.

Given a definite promise now that the industry will be cared for, capital will lay down permanent yards and plan for business on a large scale. Without that promise all Canada can expect is makeshift yards that will be utilized until the scarcity of vessels is overtaken, but that will close down when the employment they might offer would be a real blessing.

Here is a great opportunity to provide Canada with a great industry. Never before has her course been so clear. The opportunity now presented will probably never return. The decision rests with the Government.



COMPLETION OF GREAT ENGINEERING FEAT
Entrance to the Connaught Tunnel through the Selkirks, constructed at a cost of twelve million dollars by the Canadian Pacific Railway Co. The tunnel, which was opened for traffic this month, saves many miles and reduces the grade very considerably

Protecting Our Overseas Trade.

BEARING in mind the enormous sums of money that have been expended by Canada in developing her means of internal communication, isn't it only logical that she should display something like proportionate enterprise in developing her means of external communication? By federal and provincial subsidies and other forms of encourage-



THE RECONSTRUCTION OF CANADA'S PARLIAMENT BUILDINGS

This historic photograph shows the progress made to date in laying the foundation of the structure that will replace the old buildings burned last winter. On the left the masonry work is well advanced; this will be the Senate side of the building

ment, she has provided herself with three transcontinental railway systems; by improvements to her inland waterways and by various aids to navigation she has greatly cheapened the cost of transporting her agricultural, mineral, forest and manufactured products to tide water. But once she has landed them there, she leaves them almost wholly dependent upon the carriers of other nations for the means of reaching her export markets.

It is no belittlement of the home market to say that Canada is in need of export markets. In natural products she has more than sufficient for the requirements of her meagre population. The surplus is an asset which she should endeavor to convert into cash by selling it abroad in order to provide herself with funds for her own further development.

But how is she to ensure her ability to sell abroad unless she has the means of effecting delivery? And how can she effect delivery without ships? Is she justified in supposing that vessels of non-Canadian register can always be had at the times and in the numbers required for her export business? Would it not be eminently safer for her to provide her own means of ocean transportation, and so free herself from a dependence that may some day prove her undoing?

Ships can be acquired for the Canadian register by the simple expedient of purchasing them from the United Kingdom, and entering them without payment of duty. But they would be more advantageously acquired if we built them ourselves, for then we would have the ships and the money too, as well as the facilities for maintaining our ships in perfect repair.

The lack of ocean tonnage is as great a weakness in our national transportation programme as the lack of shipyards is in our national industrial programme. The former is a necessary link in the system connecting the home producer and the foreign consumer; the latter is a necessary middle story of a structure whose foundation

is the basic iron and steel industry and whose upper story is the lighter engineering trades.

The announcement at this stage of a definite policy for the liberal encouragement of shipbuilding would be followed by three results of the highest importance. First would be the acquisition of an industry that would flourish simultaneously on the Atlantic and Pacific coasts, on the St. Lawrence and on the Great Lakes. Second would be the extension of our basic operations in iron and steel to the rolling of plates and larger structural shapes—a development that has hitherto been denied us because of the limited extent of our home market. Third would be the steady annual enlargement of our merchant marine, with all the attendant advantages of Canadian control, better service and lower rates.

Canada's New Political Party.

ACCORDING to a press despatch from Winnipeg, some 60,000 farmers, affiliated with the Dominion Council of Agriculture, have decided to constitute themselves a political party, and to that end have provided themselves with a political platform.

While the Council of Agriculture claims to speak for the organized farmers of Ontario, it is easily dominated by the farmers of the three Prairie Provinces, and represents, in fact, an effort to effect solidarity of opinion and unity of action in attaining the objects for which Western grain growers have always been conspicuous.

It is not surprising, therefore, to find that one of the chief planks in the political platform of the new party is tariff reduction. The British preference is to be lowered from an average of one-third to an average of one-half, with provision for such further reductions (presumably 20 per cent. of the remainder each year) as will ensure complete free trade between Great Britain and Canada.

within five years. Parliament is to be asked to accept the Reciprocity Agreement with the United States, which the people of Canada so emphatically rejected in 1911; all foodstuffs not included in that agreement are to be placed on the free list, as well as agricultural implements, farm machinery, vehicles, fertilizers, coal, lumber, cement, illuminating, lubricating and fuel oils.

Assuming that our Western farmer friends are sincere—and their vigor of expression and tenacity of purpose leave no room for doubt on that score—one is forced to conclude that they are decidedly out of touch with popular sentiment and are lacking in their appreciation of the forces that day by day are becoming the determining factors in the winning of the war. It may be taken for granted, of course, that the views to which they have given expression will accord with popular sentiment in their own community; but elsewhere in Canada, in other parts of the Empire, and among the Allies, the note they strike will be one of discord.

The magnificent response which the manufacturing industries of Canada have been able to give to the call for munitions is surely ample justification for the protective policy that has brought about their establishment. The duty we owe as a belligerent to the business men who, in the face of great difficulties and frequently at the risk of large fortunes, have built up in Canada an equipment that has been so effectively employed in this time of national crisis, far outweighs any little sacrifices that we as individuals may have had to bear in the meantime. Protection, properly understood, is not the protection of the individual, but the protection of the nation; it is an investment by the nation for the nation, from which all classes of citizens, including manufacturers, artisans, farmers, miners, fishermen, shopkeepers and carriers draw their dividends. The growth and prosperity of this country before the war ought to have been sufficient answer to those who raised the cry that our investment was an unprofitable one. The effective part which Protection has enabled this country to play in the war ought to mark it out more clearly than ever as a policy which should not be lightly abandoned. Its details may need revision and readjustment, but as a general policy it should be above attack.

A Tactless Suggestion.

THE suggestion that Canada should revive the Reciprocity Agreement with the United States appears to us to be especially inopportune. Apart from the fact that Canadians, as a nation, so recently showed themselves overwhelmingly opposed to it, there is something in the suggestion that almost savors of disloyalty to our Allies.

We know that the ablest economists of Great Britain, France, Belgium, Russia and Italy are endeavoring to work out some scheme whereby the countries that are allied together against Germany and Austria will, after the war, reserve as far as possible their great consuming markets for their mutual enjoyment. We know that the reason for such a scheme being contemplated at all is the recog-

nized necessity for co-operation among the Allies if they are all to recover from the enormous financial and economic strain to which the present struggle is subjecting them. We also know that if this scheme is to reach fruition it will mean that each Ally must give every other Ally tariff concessions, to the enjoyment of which neutral countries will not be admitted.

Should Canada, at this stage, commit herself to any premature course of action that might render the whole undertaking abortive? Should she announce a fiscal policy that would say in effect to the nations that are fighting her battles: "We are going to give the United States better tariff treatment than we will give you?" It is true the grain growers would provide for complete Free Trade within the British Empire, and that no favor would be granted the United States that would not be granted at the same time to the Mother Country. But what of the proud French, the indomitable Russians? Are the splendid sacrifices they have made and are still making in the cause of freedom to receive less recognition from us than the material assistance we have had from the United States by paying for it? Would the people of Canada tolerate for one moment a proposal that would be as much an offence to the Allies as it would be a reward to the United States for staying out of the war?

We may give the grain growers credit for sincerity, but we cannot give them credit for diplomacy.

The Cure for the High Cost of Living.

WE can entirely sympathize with the grain growers in their desire to secure some relief from the high cost of living, though we differ from them as to the means that might best be employed for attaining that end. To remove the duties on foodstuffs coming from a country where the necessities of life are sold at prices that average as high, if not higher, than in our own country is not likely to get us anywhere. Theoretically, it may appear sound when living is high, to remove the tolls of customs, but there is little use in disarranging a policy to satisfy a theory, when we know beforehand that our action is not going to bring us tangible results.

The high cost of living finds its prime cause in the shortage of production, and our farmers, as the greatest producers in the country, have the remedy largely in their own hands. We know, of course, that help is very scarce, and that fact is pleaded by agriculturists as one of the reasons why production is on the down instead of the up grade. When a manufacturer pleads that excuse for a request to have the Alien Labor Law relaxed he is always met with counter-representations from organized labor, to the effect that if the manufacturer will only make his wages more attractive, he can get all the help he wants. Perhaps it might not be altogether irrelevant to suggest the same remedy to the farmer. With all kinds of farm produce rising in price, he can hardly argue inability to pay as the reason for refusing to do so. The necessity for keeping up with the demand for his output has caused

many a manufacturer to advance wages 50 or 60 per cent. in two years, and what is more, he has found it profitable to do so. What the manufacturer has done, the farmer can do, if he only makes up his mind to it, for high prices and larger production are certain to leave him a balance on the right side.

The high cost of living finds its secondary cause in the cost of high living. On that score we are all more or less to blame. We are wasteful in our eating, in our clothing, in our daily work and in our daily recreation. We eat meat twice a day when once would be sufficient; we indulge in delicacies that we could do just as well without, and we all allow ourselves to be served with larger portions than we require. We discard our clothes when they begin to show signs of wear or when fickle fashion decrees a change of style. We install a telephone to save our own time, but only to waste the grocer's time by calling up at intervals throughout the day and causing him to make four or five deliveries when one would do. Despite the incentive to economize, we are squandering money on amusements at a rate that would have shocked our grandfathers, and in our eager haste to make more money, to be spent with a similar disregard for economy, we keep our eyes closed to the multitude of small leaks that are constantly sapping our resources.

The farmer knows, without any outsider telling him, how to fit the cap on himself. Gasoline tractors may be a necessity to some, but they are certainly a luxury to others—a luxury they have indulged in when they really could not afford it. Farm implements not properly sheltered from the weather represent so much capital wasted. Butter and eggs are by-products that ought to be obtainable from any properly conducted farm, but the West particularly is a large importer of these articles.

Business men will gladly join hands with the farmers in an intelligent effort to free this country from the high-

cost-of-living problem, but let us all do our part as individuals, instead of trying to saddle the blame on someone else. If we would do that the situation would soon right itself, and there would be no need for legislative interference.

Fair Treatment for Munition Manufacturers.

WITH the approach of another session of Parliament there has been a renewal of the agitation for a heavier tax on munition manufacturers, who, in some

quarters, are being held up to popular reproach as war profiteers.

With the view that those who are being made rich by the war should be freely taxed, INDUSTRIAL CANADA finds no fault. But it is erroneous to suppose that every munition manufacturer is making big money. Of all the firms that have taken up this line of production it is probably safe to say that 25 per cent. have actually lost money; another 25 per cent. have done little better than break even; perhaps a third 25 per cent. have made no more than a fair profit. If the remaining 25 per cent. have made large profits, it is because they have shown themselves efficient manufacturers.

In view of the manner in which these efficient manufacturers have been pilloried in the public press, it is only fair to point out that it is efficiency, not

inefficiency, that is going to win us the war. As applied to manufacturing, efficiency means increasing the production while lowering the cost. Production may be increased by speeding up each operation or by adding to the staff and equipment, or by a combination of the two. The cost is lowered by distributing the overhead or fixed charges over a larger output, and by the exercise of greater care to avoid rejections.

A manufacturer who assumes a big financial risk and overcomes numerous difficulties is surely entitled to enjoy the fruits of his enterprise. If that enterprise happens



THE DOMINIONS ROYAL COMMISSION

Hon. J. R. Sinclair
New Zealand

Sir Edgar Bowring
Newfoundland

Sir Jan Langerman
South Africa

Sir Alfred Bateman
England
(Chairman)

James Tatlow
Ireland

W. Lorimer
Scotland

—Photo by British and Colonial Press.

The Dominions Royal Commission has been holding sessions throughout Canada recently, inquiring into the natural resources of the Dominion, with a view to preparing for the development of trade and immigration after the war.

to have been directed in a channel that has proved beneficial to his country, he ought to be entitled, in addition, to the thanks of a grateful people. Had he risked his fortune only to lose it, he would probably have received sympathy from the people whose cause he had failed to help. Why, then, should his success be resented when, upon his success, their own success is partially dependent? It is because some manufacturers have been efficient or successful that the Munitions Board are able to buy shells to-day for one-fifth the price they had to offer when the war broke out. It is because of that success that we are now turning out thousands of shells per day where we only turned out hundreds a little over a year ago. These results have a vital bearing upon the prosecution of the war, and the men who are responsible for them are unfairly treated when they are scornfully referred to as profiteers trafficking in the needs of their country.

If their profits have been inordinately large there would be little objection to their being taxed on a higher percentage than those whose profits have been only moderate. But let us be fair about it, let us ask that the supertax be levied on inordinate profits earned in any line of business, instead of singling out the successful munition manufacturer as one upon whom an ungrateful country should levy a special toll.

Labor Troubles Ahead.

WHAT position will labor find itself in when the war is over? Can the present high standard of wages be maintained, or will there have to be a cut, and if so, how much?

Even the most cursory consideration of these questions soon brings the employer round to the point where he makes up his mind he must be on the lookout for trouble. It may be easy to delay an advance in wages, but it's an altogether different proposition to hasten a reduction. When the war is over there will have to be reductions in those lines of manufacture where outside competition has to be met; if labor refuses to stand for it the manufacturers will have to go out of business.

The situation ahead is more serious than most of us appear to realize. The requirements of the belligerents, in the way of munitions and military equipment, have been so extensive and so urgent that the determining factor in the placing of orders has frequently been date of delivery rather than price. The alluring profits held out to manufacturers engaged in war business have induced a spirit almost of recklessness, and in order to secure those profits they have abandoned their customary caution, and bid against one another for the skilled labor necessary for the fulfilment of their contracts. At the same time the withdrawal of millions of men all over the world from producing occupations to engage in military service has enormously accentuated the shortage of labor, and made it easy for the workman to enforce his demand for a higher wage. The curtailment of agricultural production, meanwhile, has so advanced his cost of living that he regards himself as little better off than he was before. Still,

realizing the strategic advantages of his position, he does not hesitate to press for what he calls "better conditions," in which term may be included a closed shop, a shorter working day, and restriction of output. In the face of this campaign to obtain more money for less work, the employer has had to avail himself of inexperienced help, with the result that the efficiency of his working forces has depreciated on the average probably 33 per cent.

The question for us now to ask ourselves in all seriousness is, "Where is it all going to end?" It is quite obvious that this sort of thing cannot go on indefinitely; somehow, somewhere, a halt must be called. It may be impracticable to deal with the situation so long as the war hangs on, but the moment it is over there is bound to be a shock from the impact of labor on capital, just like the shock that is felt when the emergency brake is applied to an express train travelling at a high rate of speed.

Now capital and labor both know that there is danger ahead, that the brakes must be applied sometime, so why don't they get together, instead of rushing right on to their common danger and trusting to the emergency brake to save them from disaster? If capitalists were to organize themselves as employers and prepare for a general lockout, instead of drifting with the tide, they might bring the leaders of the labor movement to their sober senses, and pave the way for some such solution as profit-sharing. But, meanwhile, the Unions are entrenching themselves behind the eight-hour day, the closed shop, and other forms of defence, apparently for the express purpose of withstanding a siege.

What are employers going to do about it? Clearly the time has passed for playing lone hands. Organization is the watchword of to-day, in civic as well as military life. Team-play will bring results, where individual action is doomed to miserable failure. Canada's industrial future is too important a stake to warrant our manufacturers in leaving everything to chance. Something should be done, and done now! The question is, who will start the ball rolling?

The Bonne Entente.

IN pleasing contrast to the spirit of sectionalism and selfishness that is blocking the progress to national unity in so many directions, it is refreshing to observe what good results have followed from the effort to effect a *rapprochement* between French and English speaking Canadians.

The *Bonne Entente*, as the movement is officially called, appears to be launched well on the road to success. In October, a body of some fifty representative business and professional men from Manitoba, Ontario, New Brunswick and Nova Scotia journeyed to Montreal, where they were received with open arms by a similar number of representative French-Canadians. There were civic receptions, motor drives, luncheons, school inspections, banquets and speeches—all conducted with the best of good fellowship, and all designed to cultivate mutual acquaintance and inspire mutual confidence. From Mont-

real the entire party proceeded in triumphal procession to Three Rivers, then to Quebec and lastly to Sherbrooke, where the English-speaking visitors presented their French-speaking hosts with a loving cup, out of which all drank to the eternal friendship of the two races combined in one nation.

Next month, a delegation of French-speaking Canadians will tour Ontario, where a programme is already in preparation that promises to eclipse the warmth of feeling evoked by the initial experiment, notwithstanding the fact that loving cups containing anything stronger than ginger ale will be barred.

While it may be true that the functions and speeches of this movement were all more or less carefully staged, there can be no question but what the results secured have more than justified the expectations of the promoters. Interprovincial relations between Ontario and Quebec were becoming somewhat strained when the "*Bonne Ententes*" intervened. Ontario was resentful against Quebec for her backwardness in recruiting. Quebec was even more resentful against Ontario for her attitude towards bilingualism. Ontario stiffened her back on the language issue and refused to budge. Quebec in retaliation commenced a boycott against Ontario goods.

Things were in this touch-and-go position when a number of the sober-minded business men in each province came together and adopted a resolution stating their unalterable belief that there was not, and never would be, any issue between the two races that could not, and of right should not, be settled amicably, equitably and to the satisfaction of the vast majority of all concerned. The subsequent trip through Quebec was organized for the purpose of spreading that gospel, and if it had no other effect than to demonstrate that neither race had the horns and hoofs which extremists on the other side believed it to have, it was well worth all the time and all the money expended in making it a success.

Meanwhile the judgment of the Judicial Committee of the Privy Council, in the appeal against Ontario's celebrated School Regulation No. 17, has, happily, enabled both sides to quit the fight with honor. Feeling has subsided to a point where Ontario travellers report that not only has Quebec's boycott against them been lifted, but now they are frequently received as personal friends, where before they were merely business acquaintances.

In some quarters the *Bonne Entente* is regarded as a joke; in other quarters it is seriously viewed as a political game of some sort. From an intimate knowledge of what it has already accomplished, INDUSTRIAL CANADA acclaims it as a vital force, honestly working in

the cause of national unity, and acquiring a momentum that displays danger signals for the scoffers who would obstruct its progress.

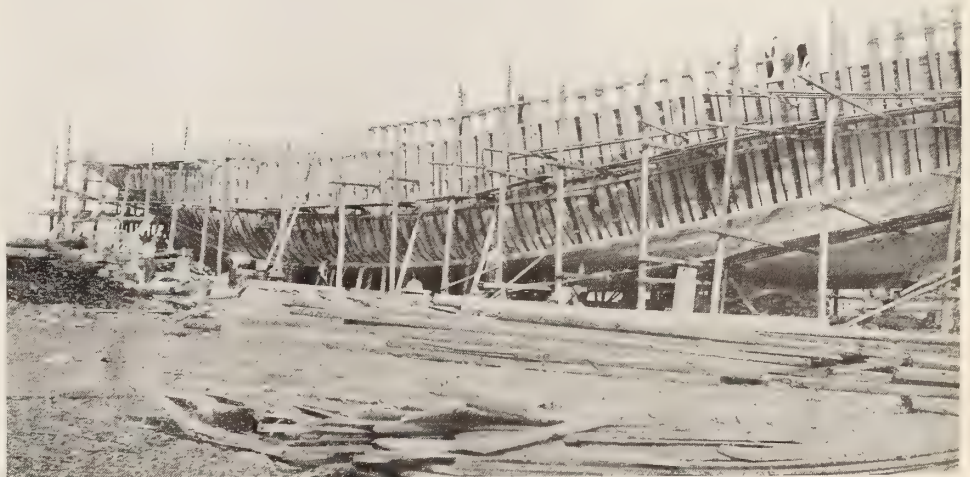
Industrial Research.

ELSEWHERE in this issue will be found an article on the subject of Industrial Research, which we earnestly recommend for careful reading by every Canadian business man. It is by Mr. Arthur D. Little, of Boston and Montreal, whose long experience in the work about which he writes, and whose close observation of all sorts of industrial processes and appliances, enable him to speak instructively and authoritatively on one of the most fascinating problems before us to-day.

Those who have marvelled at the efficiency of German industry have only to familiarize themselves with the history and achievements of her institutes of research to understand the reason for her wonderful success. Those who have regretted the backwardness of Canada in some branches of industrial development have only to realize her destitution in institutes of research to comprehend the reason for her tardy progress.

Most people are inclined to take the results of research work more or less for granted. The telegraph, the telephone, the incandescent lamp, the gasoline engine are objects that we all familiarly employ, but hardly ever do we give a thought to the difficulties under which business had to be transacted years ago without these conveniences; still less do we appreciate the obligations we owe the men whose long study and years of experimentation wrested from nature the secret of the principles upon which these devices are constructed and so conferred their blessings on mankind.

Were the world to be suddenly deprived of the advantages which the research of even the last quarter of a



REVIVAL OF NOVA SCOTIA SHIPBUILDING

This wooden freighter under construction at Meteghan, N.S., while not as large as some of the ships built in the old days on the east coast, is still a fair-sized vessel

century has brought within reach, society would be plunged into a condition of chaos. Likewise, a quarter of a century hence, people will look back to 1916 and wonder how the old fogies of this day and generation managed to eke out an existence.

The depths of science have not yet been sounded. Researches into the highways and byways of physics and chemistry will still reward the careful investigator, for as the world moves forward, the industrial applications of science keep constantly opening up new fields of endeavor, and give practical direction to chemists and to physicists by showing them the step that always lies ahead.

If necessity is the mother of invention, it is the father of research. The problem that brings us to a sudden halt is the problem that spurs us on to be resourceful in devising means for its solution. Production of every kind would be little better than slavery if it did not hold out to us the hope of improvements to be discovered, quality to be enhanced, labor to be saved, waste to be eliminated, or materials to be employed to better advantage. We owe our success of to-day to the fact that we solved the difficulties of yesterday; through the new difficulties that have now overtaken us we will hew a path to to-morrow's success.

It will be gratifying to Canadians to note that a problem fraught with such tremendous possibilities—especially for a country with resources as extensive and as varied as ours—is to receive immediate attention at the hands of a Research Board under the Department of Trade and Commerce. Comprised mainly of university professors, at whose disposal lie the best laboratory facilities our country can provide, it will be the duty of the Board to see, first, that the known results of scientific investigation to date are brought home to the workers in those industries to which each would apply; and, second, to acquaint themselves with the problems peculiar to each industry in an endeavor to give practical direction to further research.

Nothing but great and lasting good can come to Canada from a faithful performance of the duties for which the Board has been appointed, and from a readiness on the part of our manufacturers to profit by the help the Board will be prepared to give them. It enters upon its work on the eve of an era of merciless world competition—an era that will subject the resourcefulness and enterprise of our people to a very severe strain. We will issue victorious from the struggle only as we make the most of our opportunities, and utilize to the best advantage the material resources with which we have been endowed. Our best wish to the Board is that its services will prove useful in proportion as our needs prove great. —G.M.

Technical Education.

PUBLICISTS are advocating preparedness. Nevertheless it is a striking fact that the bulk of the contributions to post-war proposals which one observes seem to be directed towards preparedness in selling and marketing goods (which are presumably to spring from industrial communities like mushrooms) rather than prepared-

ness in efficient production. It is, of course, much more fitting that the real thinking in these subjects should be done by men in the business and commercial life of Canada. Experience has shown that politicians in general take very little interest in the real problems which confront a community, whether their habitat be in the small puddles of civic politics or in the bigger pools of Federal political life. In any case, it behooves men who put politicians where they are, to look to it that the problems involved in the larger growth of Canada after the war shall be met squarely.

The question of preparedness resolves itself into two aspects,—(1) Are we prepared to compete industrially with our opponents in trade who will most surely be super-aggressive after the war, and (2) Are we prepared to educate and train the coming generation to take up its share of Canada's burden?

Taking up the first proposition, it is on first appearance somewhat a pity that the efforts of our universities have not been directed to a far greater extent to the production of science graduates,—men who are fitted to lead our industrial life as engineers and chemists. What do the men employed in the sugar, textile or milling propositions know of the botany or chemistry of their industry? We do not refer to the paid experts employed by such concerns. We refer to the young men who are growing up in these concerns and who at the moment are merely adjuncts of an organization of whose fundamental processes they know nothing.

What are we doing to educate our people to fit them for the struggle to come? Because there is nothing more certain than that the ten-year period after the war will bring about such a struggle in industrial and commercial life in Canada, that every quality calling for strength and adaptability will be challenged. Those who look for a primrose path in Canada after the war are merely filling the part of the ostrich.

The problem of industrial research is one which will call for careful thought and planning before any really efficient and comprehensive scheme can be evolved. Many industrial concerns will undertake work along these lines within their own organizations. Along some lines of research the aid of the universities will necessarily be invoked, and it is gratifying to know that they have many highly efficient and capable men in their Faculty of Science.

Technical education as a federal issue is moribund, or at least has not yet become a live issue. The Dominion Government has initiated through the Department of Trade and Commerce an educational effort looking to preparedness in trade after the war. Valuable work has also been initiated in connection with the Trade Commission now returned from overseas. It remains to be seen how this work will be augmented by preparedness at home. Unless education in all its branches is to be left entirely with the Provinces, it behooves the Dominion Government to take immediate action looking to a sound comprehensive plan of technical education.

THE RELATION OF RESEARCH TO INDUSTRIAL DEVELOPMENT*

By ARTHUR D. LITTLE

THE German alarm clock, to which my associate, Mr. H. E. Howe, referred in a recent address, has so thoroughly awakened and aroused the whole world to the vital necessity of applying the scientific method in business and governmental affairs, if prosperity and even national security are to be assured to any people, that it has become the duty and privilege of those of us who are familiar with this method and its applications to preach the gospel of Research.

I esteem myself therefore particularly fortunate in having the opportunity which you have given me to-night to carry the message to such a representative and, I am sure, sympathetic audience of Canadian business men and manufacturers.

I assume with confidence that few, if any, of you have come here in the attitude of mind of that American steel-maker in a small and remote town who, years ago, when his directors decided that their interests might be furthered if he were to employ a chemist, wrote back:

"Send down one who can play the violin. We can stand his damned nonsense in the daytime if he will amuse us in the evening."

I do not play the violin myself and I have not given up a Thanksgiving reunion with my old father and mother in the State of Maine to come here to amuse you. I have come here because I believe that I carry a message of supreme importance to each one of you, a message which not only concerns your individual prosperity but which is of vital import in the development and security of the Dominion.

It is usually regarded as unprofitable to speculate on what might have happened if your uncle had been your aunt, but I feel that we may justifiably devote a moment to the consideration of where we would now stand in the event of that always interesting possibility.

The Railway Not a Casual Invention.

The railway, as it serves you, is not the casual invention of Stephenson. It is the product of many decades of industrial research by Bessemer, Westinghouse, Pullman; by Dr. Dudley, who standardized its materials and supplies; and by countless chemists, engineers, mathematicians and physicists whose contributions to the common stock of knowledge made

possible the development of its equipment, in at least as real a sense as it is the creation of the great organizers, audacious capitalists and wise executives with whom its development is commonly associated in the public mind.

The telegraph, as it came from the hands of Morse, was a feeble and restricted means of communication. It carries the burden placed upon it by the business world to-day only because it embodies the results of protracted research by Wheatstone, Siemens, Stearns, Edison, Murray and Rowland, which have many times multiplied the working capacity and operating length of telegraph lines.

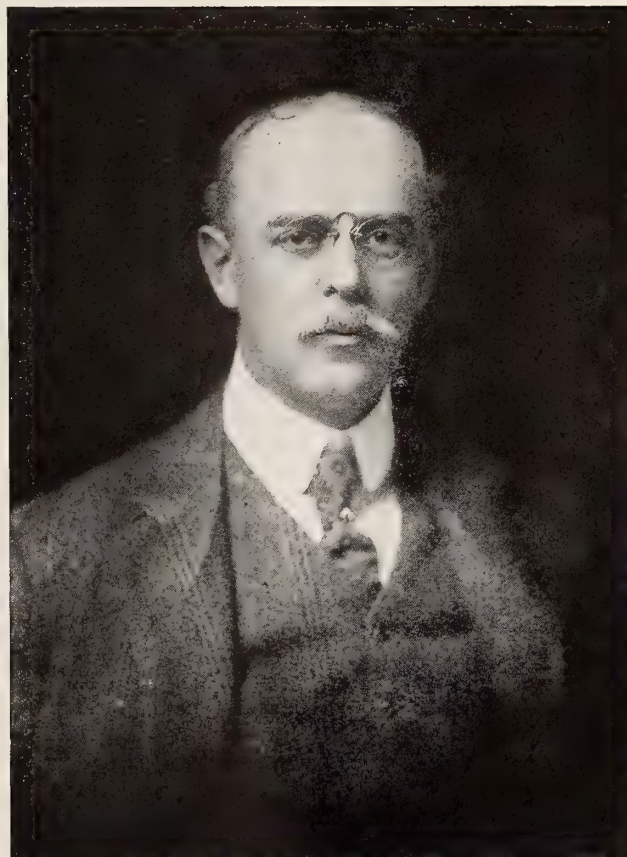
Evolution of the Telephone.

The telephone, although initially a product of the most refined research, was when first given to the world by Bell little more than a scientific curiosity, as halting and uncertain in its speech as a child of three. To-day, for the purpose of a conference, it brings the people of a continent into one room and even carries the human voice from New York to Honolulu, because it has passed through the laboratories of Berliner, Edison, Hughes, Blake, Hennings and Carty, where, in each instance, new possibilities and powers have been bestowed upon it by intensive and prolonged research. Wonderful and seemingly perfect as the instrument is to-day, the American Telephone and Telegraph Company finds it profitable to authorize its chief engineer, Mr. J. J. Carty, to expend for industrial research a greater sum than any other man in the world has at his disposal for such purpose.

The silent dynamo, instinct with power, supplies the current which lights our streets and homes and factories, drives our machinery, fires electric furnaces, creates new products in electrolytic cells, and is our ready and ever willing servant responding in countless ways to our demands. It so serves us, only because Faraday by refined research, stimulated and directed by the scientific imagination at its best, developed the underlying principles on which its operation depends.

The ocean steamship, from wireless to propeller, is a microcosm of the results of research without which it would be a scow. The harvester is the embodiment of years of systematic experiment.

Coming back now to our uncle and our aunt, I ask you to consider what would be the value of corner lots in Winnipeg, of mines in Sudbury, of farms in Saskatchewan, of water-



ARTHUR D. LITTLE
President, Arthur D. Little, Limited

* Address delivered before the Toronto Branch of the Canadian Manufacturers Association December 1st, 1916.



EXPERIMENTAL PAPER MILL

In this building the first research problem for Canada was solved, this being the milling of flax straw

power on the Shawinigan, of forests in Quebec, of manufacturing plants anywhere in the Dominion, without these aids to industry? Where would your own business be without them? Is it not evident that modern industry is so broadly based and so intimately dependent upon the results of research that in their absence it could not exist a day?

I challenge you to name a business from shoe blacking to banking which is not vitally interested in the application of research results. In the earlier days of shoe blacking Bixby's paste and Day & Martin's liquid sufficed for all demands of the most exacting customers of the peripatetic polisher of shoes. The modern bootblack applies a first coat, the formula for which has been worked out in the laboratory, and finishes off with a wax emulsion prepared in accordance with the latest teachings of the chemistry of colloids. He has a gum tragacanth paste for cleaning tan shoes and a tan paste appropriately colored by synthetic dyes for the polishing, something else for patent leathers, and Blanco for white shoes. He often styles himself "Professor," especially if he is colored. He works in a parlor or emporium, and if the emporium bestows its benefits upon ladies it carries green polishes for green shoes, red polishes for red shoes, bronze polishes for bronze shoes—something, in fact, for each of the bewildering variety of shoes which add so much to the interest of life just at this time. I don't think any bootblacks now use Day & Martin's blacking on white shoes, but some manufacturers do. Of course I do not mean Canadian manufacturers. But here are the statistics which prove it as regards some manufacturers in the United States.

Why Manufacturers Fail.

There are in the United States over 250,000 corporations. Over 100,000 of them report no net income whatsoever. Ninety thousand make less than \$5,000 a year. Only 60,000 make \$5,000 a year or more. Making all allowances for lack of capital, bad credits, and all the other commonly recognized causes of industrial disaster, I do not hesitate to say without fear of successful contradiction that the chief cause of this amazing and discreditable showing is due to the failure of small manufacturers to utilize that vast body of organized knowledge which the research of the last one hundred years has placed within their reach.

This is merely reiterating what was said years ago by that distinguished Canadian who has done more than anybody else to spread the gospel of industrial research in the United

States, Dr. Robert Kennedy Duncan, the founder of the Mellon Institute at Pittsburg. In his "Chemistry of Commerce," a book which I can highly recommend to all of you, Dr. Duncan says: "The small manufacturer who is swept out of existence will often wonder why. He will ascribe it to the economy of large scale operations, or business intrigues or what not, never knowing that his disaster was due to the application of pure science that the trust organizations and large manufacturers are already beginning to appreciate."

To this may well be added these words of J. J. Carty, the world's greatest telephone engineer:

"In the present state of the world's development there is nothing which can do more to advance American industry than the adoption by our manufacturers generally of industrial research conducted on scientific principles. . . . Those who are the first

to avail themselves of the benefit of industrial research will obtain such a lead over their competitors that we may look forward to the time when the advantages of industrial research will be recognized by all."

Among those who have made the advancement of the boundaries of human knowledge their life's work there still remain a few who regard science as a sort of private preserve for intellectual sportsmen and who draw an esoteric distinction between pure and applied science. With them research acquires sanctity in proportion as its results seem unlikely to be of any earthly use, while research which has for its avowed object the satisfaction of some human need is assumed to be tainted with commercialism and to involve a lower order of intellectual merit and achievement.

But the alarm clock has been heard even in laboratories devoted to so-called pure science and the splendid work of such great research laboratories as those of the General Electric Company and Eastman Kodak Company has amply demonstrated that the solution of industrial problems affords full scope for the highest scientific intellect and training. To again quote J. J. Carty, "In the last analysis the distinction between pure scientific research and industrial scientific research is one of motive."

Fortunately also for the world the most self-centred investigator can make no addition to the sum of human knowledge which may not some day become a milestone of industrial progress.

Unintentional Results.

The scientific study of the atmosphere to which Englishmen have so conspicuously contributed was for the most part carried on with no thought of making an industrial application of the results obtained. In 1785, Cavendish recorded the production of nitric acid on the passage of an electric spark through the air. Five hundred thousand horsepower are now employed in turning that discovery to practical account in the fixation of atmospheric nitrogen, in Norway alone. Recently, as it still seems, Dewar succeeded in liquefying air and in separating the oxygen and nitrogen by fractional distillation. Already this separation constitutes a fundamental factor in the methods for the production of synthetic ammonia, and the manufacture of the nitrogenous fertilizer known as cyanamid. Incidentally Dewar invented the thermos bottle as a container for liquid air.

Still more recently Ramsay demonstrated the existence in the atmosphere of five rare and unknown gases with unique

properties. Of these, argon is now manufactured in quantity in Canada and obtainable in liquid form in cylinders. To another, neon, we now confidently attribute the long mysterious phenomena of the aurora borealis. Tubes containing highly rarified neon may become as common to our descendants as candles to our ancestors. They glow with a rich, mellow golden light on the passage through them of an electrical discharge.

There are few men to whom the world stands in greater debt than to the French chemist, Pasteur. There is probably not a man in this room who is not under heavy obligation to him and except for his discoveries some of you would not be here at all. His demonstration of the germ theory of disease and the development of the serum and anti-toxin treatments has saved more lives than the present awful war has cost all the belligerents combined. Such service is beyond estimate in monetary terms, but the direct financial value of Pasteur's discoveries was years ago appraised by Huxley as sufficient to cover the whole cost of the war indemnity paid by France to Germany in 1870.

In 1865 a fatal epidemic among the silk worms had ruined the silk-growers of France. In June of that year Pasteur was called to the south of France to study the disease. In September he announced the method which proved successful for its control. Other studies saved the French wine industry from the destructive ravages of phylloxera, stamped out chicken cholera and anthrax, and for the first time put brewing and wine making on a scientific basis. Of him the English chemist, Sir Henry Roscoe, has said: "What was the secret power which enabled Pasteur to bring under the domain of scientific laws phenomena of disease which had so far baffled human endeavor? It simply consisted in the application to the elucidation of these problems of the exact methods of chemical and physical research."

To each one of you I commend the statement of Pasteur himself that "in the field of observation chance only favors those who are prepared."

Chance favored a man who was prepared, when, in 1828, the German chemist, Wohler, set aside to crystallize a solution of the inorganic compound cyanamid, only to find that the crystals which were deposited were those of the organic compound urea. The moment that observation was made the wall which, in the minds of men, had divided the organic from the inorganic world crumbled and disappeared and the science and industry of organic chemistry followed in logical and orderly development. In one department of the new science that boy of 18, who later became Sir William Henry Perkin, derived a dyestuff, mauve, from coal tar aniline and laid the foundation for an industry in which a capital of \$750,000,000 is now employed.

Progress in Illumination.

Some of our greatest industries are concerned with the art of illumination and adequate illumination is in itself an important factor in determining the productive capacity of industrial plants. How would your balance sheet stand if your factory was lighted with tallow dips? We still give credit to King Alfred for shielding the candle by transparent strips of horn and thereby making the first lanthorn. But after the sun went down his palace was a gloomy place, compared to the poorest workman's cottage of to-day.

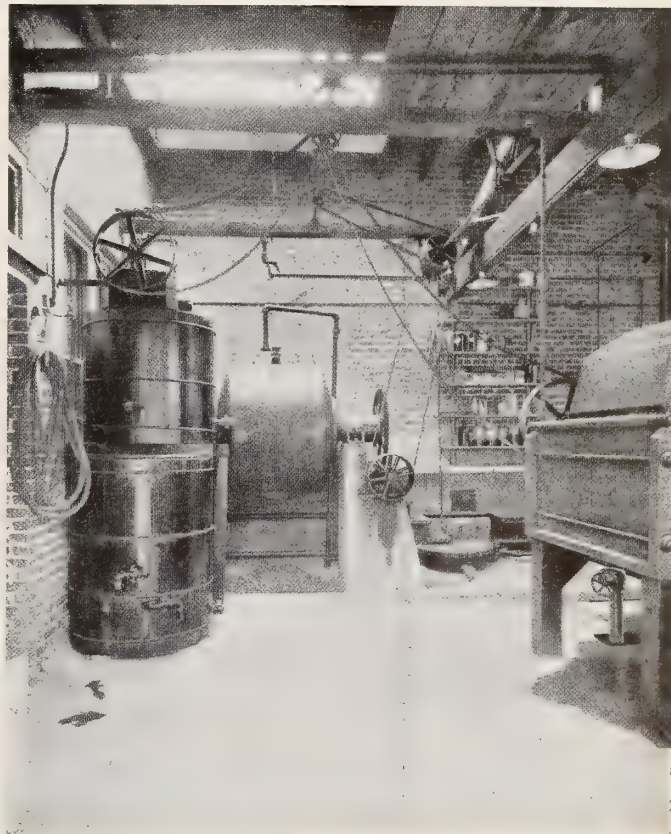
The pulling of a chain, the pushing of a button now floods a room with brilliant light, solely because science during the past 100 years has been applied to the problems of illumination. The gas works in every municipality, the great oil companies whose names are synonymous with organized and profitable industry, the electric light plants, the carbide factories, the establishments throughout the world devoted to

the manufacture of incandescent lamps, gas mantles and countless other details of equipment are founded not on capital, not even on organization, but in the last analysis upon science. They owe their existence to the applied research of Murdock, which discovered gas from coal; of Lowe, which led up to the gas producer; of Welsbach, which discovered in the monazite sands of far away Brazil the elements which so greatly raised the illuminating power of gas as to save the industry from what seemed to be the overwhelming competition of the incandescent lamp; of Wohler and Willson, which gave us carbide and acetylene with oxy-acetylene welding and the nitrogenous fertilizer cyanamid as by-products; of Davy, which demonstrated the arc lamp; of Edison, Swan, Malignani, Howell and Coolidge, which initiated and developed that scientific marvel the incandescent lamp; and other unnumbered and perhaps forgotten workers who in their laboratories fabricated each his part of the structure of the industry.

An evening might be spent on a bare outline of what research has already accomplished for the steel industry. It promises to do still more. The microscopical structure of steel is a subject of daily study in more than 200 laboratories in the United States alone. Many other evenings might be devoted to the exposition of the benefits of research in many other industries. And if the survey were complete no industry would be omitted.

The Varied Chemistry of Cellulose.

Since, however, both your time and patience have their limits such a survey, however informing and convincing it might be, is impossible. But I venture to ask you to consider briefly with me some of the industrial developments which have resulted from research in a single field of chemistry



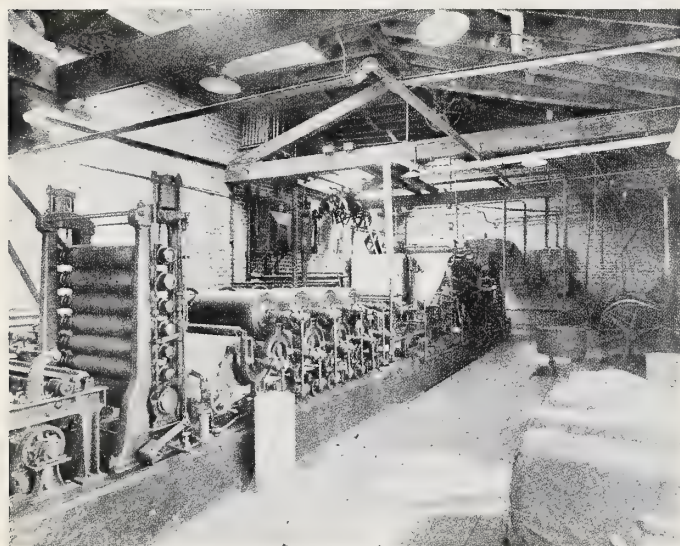
DIGESTER ROOM IN EXPERIMENTAL MILL

Showing digester, extraction apparatus
and bleach-making tanks

with which I happen to be especially familiar. I refer to the chemistry of cellulose. It doesn't sound interesting, does it? Nothing in it to make a woman lay down her knitting, or a man his evening paper? And yet it is a subject of the most direct interest and importance to every man, woman and child.

Cellulose is the greatest structural material in the world. At least ten billion tons of it are produced by nature every year. Without it the earth would be bare of vegetation, an arid waste without grass or trees or flowers. There would be no agriculture, no lumbering, no textile, cordage nor paper industry, no food for animals and consequently no food for man.

Cellulose constitutes the structural basis of all vegetation. It is the material out of which plants build up the infinite variety of form and tissue which, more than anything else, perhaps, makes the world a pleasant place to live in and a storehouse of material adapted to human needs. The cell is the unit of plant structure and cellulose is the predominant



MACHINE ROOM IN EXPERIMENTAL MILL

This view shows the paper machine and beaters

ing constituent of the cell wall. Carefully purified cotton, as in the form of absorbent cotton, is practically pure cellulose in a particular structural form, but cellulose itself is colorless and transparent. It is remarkably strong and tough and singularly inert to the action of reagents. Dry wood is largely cellulose, spruce for example containing 51 per cent., and the vegetable fibres all consist of cellulose in more or less impure or modified form.

The Textile Industries and Cellulose.

Obviously the textile industries, so far at least as the vegetable fibres like linen, cotton, ramie, and so on, are concerned, are directly based upon the properties of cellulose. Any increase in our knowledge of these properties at once reacts upon these industries. When it was found, for example, that under regulated conditions cellulose would resist the action of chlorine, while the impurities associated with the cellulose were destroyed, the old grass bleach was soon superseded by the chlorine bleach. When it was discovered that an alkaline boil would dissolve most of these impurities, leaving the cellulose substantially unharmed, the rapid methods of the modern bleachery replaced the long exposure to sun and dew. In 1851 John Mercer noticed that the ex-

posure of cellulose in the form of cotton yarn or cloth to a strong solution of caustic soda greatly strengthened the yarn or fabric and surprisingly increased its capacity for taking dyes. Unfortunately it shrank the fabric. Later, to overcome this shrinkage, Thomas and Prevost subjected the yarn to heavy tension while still wet with caustic. The result went far beyond their expectations. Under the tension the twists and irregularities of the cotton fibre disappeared and the yarn assumed an amazing silky lustre. What was practically a new fibre was given to the world and it speedily revolutionized the manufacture of the finer sorts of cotton textiles.

Similarly, the paper industry has been revolutionized by three fundamental chemical facts, namely, that the impurities associated with cellulose in wood can be dissolved under heat and pressure by caustic soda, by solutions of sulphites, and by solutions of sulphides. Upon the first is based the soda process for wood pulp, upon the second the sulphite process for wood cellulose, and upon the third the sulphate process for kraft pulp and paper.

In 1884 I was superintendent of the first sulphite pulp mill on the continent and we thought ourselves fortunate when our weekly output could be brought to fifty tons. Now a single New Hampshire mill makes 425 tons a day, and the total daily production in the United States and Canada is at least 7,000 tons with a present value of \$840,000.

Cellulose and Alcohol.

In 1819 Braconnot boiled up some cellulose in the form of an old shirt with sulphuric acid and found that the cellulose was converted to a sort of sugar, some of which he subsequently fermented into alcohol. He exhibited his results to the French Academy to the amazement of its members. A hundred years of industrial research has at last transformed that laboratory method into a commercially operative process, by which thousands of gallons of high grade ethyl alcohol are made from yellow pine sawdust. This is not wood alcohol, but is identical in every particular with that commonly made from grain. The industrial importance of this achievement can hardly be over estimated. A cord of sawdust costing 50 cents yields ten gallons of 95% alcohol, whereas a bushel of corn costing over 80 cents yields only 2¼ gallons, and a gallon of molasses worth at least 15 cents gives only half a gallon of alcohol. By this process any vegetable waste which can be collected cheaply and in quantity becomes a raw material for alcohol and releases for their proper use as food the corn and molasses now diverted to alcohol production. Incidentally it removes substantially all menace of a possible failure of the gasoline supply, since alcohol is equally available as a motor fuel.

In 1846 Schonbein in studying the effect of strong sulphuric acid upon cellulose in the form of paper, observed that the paper was thereby converted to a sort of membrane, and in the following year Pomarede and Figuier began the manufacture of the now well-known parchment paper, which, because of its grease-proof property, is largely used for wrapping food products.

A later observation that cellulose is rendered gelatinous by a strong solution of zinc chloride led directly to the manufacture of the vulcanized fibre so largely used as an insulating material and the production of innumerable articles in which lightness, strength and wearing quality are desirable. The vulcanized fibre is so dense and tough that it dulls the edge of cutting tools more quickly than sheet steel.

The observation that cellulose will dissolve in a solution of copper oxide and ammonia is the basis of the well-known Willesden method for rendering cloth and paper water and insect proof. It led to the production of the first successful

filament for incandescent lamps and is the essential feature in an important process for the manufacture of artificial silk.

Girard in studying cellulose noted that when the material is moistened with any dilute mineral acid and then dried, it is changed to a friable substance known as hydro-cellulose. On this simple fact depend the processes for removing burrs from wool, cotton from mixed goods, and cotton and other fibres from recovered rubber.

Cellulose and Explosives.

Few discoveries have been more far-reaching in their influence than the observation by Schonbein in 1845 that cellulose on exposure to nitric acid was converted into a new and highly explosive product. For seventy years research has been focused on that observation. It led von Lenk and Abel to gun cotton; Viele, Nobel, Abel and Dewar to various forms of smokeless powder. It revolutionized warfare. It led Hyatt to celluloid, Goodwin to photographic films, du Chardonnet to artificial silk, and is the underlying fact on which is based the manufacture of patent leather, artificial leather, lacquers and a bewildering variety of other products which are everywhere in daily use. Hundreds of millions of feet of nitrocellulose film carry their message of instruction or amusement to hundreds of millions of people in the tens of thousands of moving picture theatres throughout the world each year.

In 1893 Cross, Bevan and Beadle in London conducted a series of experiments which led to the discovery that when cellulose in the form of cotton or purified wood fibre is exposed to the simultaneous action of caustic soda and bisulphide of carbon, a new compound is formed known as cellulose xanthate or viscose, and constituting a golden yellow, plastic mass which is soluble in water. The compound is peculiar in that it may readily be decomposed by heat or acid with recovery of the cellulose in whatever form has been impressed upon the plastic mass, or the solution. Chemists in every land were soon applying this compound to the most diverse industrial uses. It has been used for strengthening and coating paper, printing topical effects upon cotton cloth, for making water paints, as a substitute for glue, for making billiard balls, valve wheels and hundreds of small turned articles, and was in the year before the war the raw material for the production of 20 million pounds of artificial silk worth at a low estimate \$35,000,000.

In our own laboratory the study of the action of acetic anhydride upon cellulose has led to the development of methods for the production of non-inflammable films for photographic and other purposes, waterproof artificial silk, a special insulation for the very fine wires used in electrical recording instruments, automobile goggles, lacquers, varnishes for aeroplanes, and other special products. The cellulose acetate which forms the basis of these products reproduces to a remarkable degree the physical properties of celluloid while possessing the important advantage of being non-inflammable.

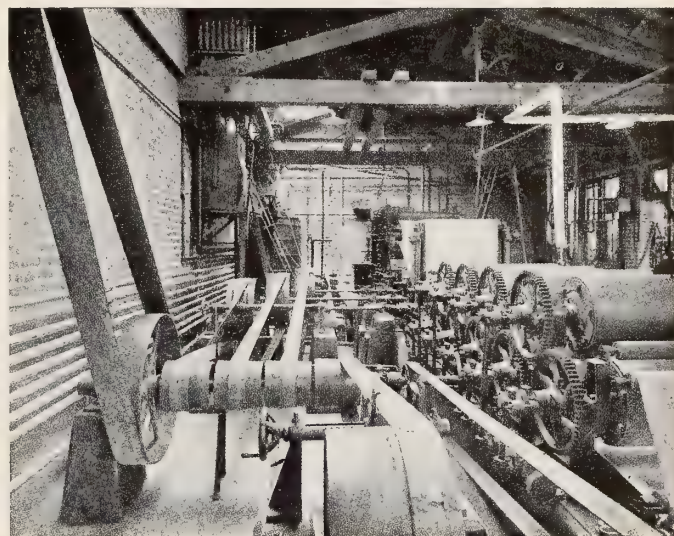
Immense Returns from Research.

When Abram S. Hewitt said that the Bessemer process for making steel adds \$2,000,000,000 yearly to the world's wealth the figure was impressive but not wholly satisfying. It led us to wonder how much of that two billion came to us and where we put it. Perhaps if we deal in smaller figures we can keep track of our profits more easily. Not long ago a manufacturer was heard to say that he would give a million dollars if he could solve a certain technical problem which had arisen in his business. It was suggested that he take his problem to the Mellon Institute. He did so. The problem was there solved in eight hours, and I believe he still has

the million. We ourselves treasure a letter from a grateful client operating three large shoe factories, which bears testimony to the fact that a certain research which we conducted for him has during the past two years saved him weekly more than the entire cost of the investigation. One hundred percent. a week is surely a satisfactory dividend even where industrial research is concerned. It raises the suspicion, however, that possibly we should revise our system of charges.

A few of you may remember that in pre-prohibition days beer commonly became cloudy when placed on the ice. It was an objectionable tendency which the best skill of the brewers was unable to overcome. A little research by a clever chemist proved that the cloudiness resulted from the deposition of albumenoids previously in solution. He remembered that pepsin digested albumen, added a trace of pepsin to the beer, and the thing was done. The beer remained bright at any temperature.

Not long ago a Jewish client brought to us a leather stain for which he was paying 85 cents a gallon. It proved to be



ANOTHER VIEW OF THE MACHINE ROOM

The paper machine drive and machine stuff chests are illustrated

water with a little gum tragacanth and still less aniline dye. We showed him how to make it at a cost of less than 10 cents a gallon. He said he began to realize where the Gentiles got the money the Jews get from the Gentiles. In a plant near Boston using two tons a week of special steel, rolled very thin, their chemist was able, in about two years, to reduce the cost of this material from 80 to 40 cents a pound, while at the same time standardizing and greatly improving the quality of the steel. Broken rails are more expensive than analyses and there are no dividends in broken trolley wires, defective castings, spotted or tendered piece goods or rejections in any line of manufacture. Competition is difficult when your wastes are your competitor's profit.

At no place in the world are the results of industrial research more strikingly evident than at Niagara Falls. The electrical energy derived from a small fraction of that stupendous flow produces, in its passage through electric furnaces and decomposing cells, aluminum, metallic sodium, carborundum, artificial graphite, chlorine, and caustic soda, peroxides, carbide, cyanamid, chlorates and alundum. The story of the electro-chemical development behind these products is an epic of applied science.

Most of the great corporations in the United States have

awakened to the commercial value of research. They do not hesitate to spend great sums in the maintenance of superb laboratories and their scientific staff. They expect research to pay dividends and it does not disappoint them. One American corporation employs 650 chemists.

A Mellon Institute for Canada.

Research on this great scale is of course wholly beyond the means of the average manufacturer, but it is also beyond his requirements. These are well served by such an agency as the Mellon Institute at Pittsburg or by group laboratories maintained by trade associations or by the higher grade of commercial laboratories which are almost institutional in character. The Royal Canadian Institute has recommended the establishment in Canada of an institution modelled on the Mellon Institute. If the millions needed for endowment are forthcoming such a step could not fail to greatly stimulate and benefit Canadian industry. The Canadian Manufacturers Association could hardly spend its revenue to greater advantage than in maintaining for the benefit of its membership a group laboratory along the lines so well laid down by the American Canners' Association, whose laboratory at Washington is devoted to the study of problems which virtually concern the prosperity of the industry as a whole. For manufacturers who desire to have their own specific problems solved there are available several highly organized and well-equipped commercial laboratories which specialize in the application of chemistry to industry. The organization which I take pride in representing has come to Canada to serve Canadian manufacturers, to assist in the promotion of industrial research throughout the whole Dominion and to aid you in the survey and development of your amazing natural resources. To this service we bring an excellent equipment, the experience of thirty years and a compelling interest.

A very large proportion of industrial problems are problems in applied chemistry. Many of these so-called problems have already been solved somewhere. The present need of industry is not so urgent for new research and for new facts as for the immediate and proper utilization of facts already known and demonstrated.

Now, as Mark Twain said, "We all talk about the weather, but nothing is done." Let us not leave this room merely to talk some more about industrial research. If I have succeeded in convincing you that there is a place for research in your own business or if you wish for concrete demonstration of its earning power in your own factory and on your own balance sheet, I offer you the opportunity to state your individual problems here and now. If you will do your part by filling out the blanks which your Secretary will provide and put your problem definitely and plainly, my associates and I will esteem it a privilege to consider each one carefully and send you our best opinion as to the probability and means of its solution. There will be no expense to you except for such research as you may later and specifically authorize.

Fields Where Research May Be Applied.

By way of suggestion let me point out a few of the more obvious fields of application for the research method.

There is first the control of quality of raw materials as in case of steel, alloys, bearing metals, lubricants, coal, paints, paper, cement, and practically everything else you buy.

Second, perhaps, is the problem of finding suitable substitutes for such supplies as are unobtainable or unduly high in price. For example there is the use of selenium in place of gold in the production of ruby glass; the substitution of tungsten points for platinum in spark plugs; of silica ware for platinum dishes for the concentration of sulphuric acid; of casein for glue; of chlorate of soda for chlorate of potash in

dyeing; of zein, derived from corn, for the prohibited shellac, for varnishing confectionery; of specification oils for oils whose value is largely in brand names; and of the specific indicated chemicals in place of high priced boiler compounds.

Of even greater importance is the scientific control of processes of production, control of formulas, temperatures, pressures, time and spacing, fineness of material, moisture content and all the other factors which influence the quality and amount of your daily output. Correlative with such control are the studies having for their object the standardization of your product and the elimination of seconds and rejections.

Wastes can be minimized and often turned to profit by well-directed research. The waste liquor of the sulphite mills is now a source of alcohol and of adhesives. Barker waste is an excellent raw material for certain low grade papers. The Cottrell process of electrical precipitation effects the recovery of values in smelter fumes, cement dust and many other chimney products. In some industries, as lumbering, the potential values in the wastes are greater than the realized values in the product.

Research Finds Substitutes.

The wholly abnormal conditions under which business everywhere is now conducted lend particular interest to another function of industrial research, namely that of finding new outlets for present products and new products for existing plants. To take an extreme case, no one, for example, realizes better than the du Ponts that the vast new plants which they have constructed for the manufacture of explosives to meet the requirements of the Allies will ultimately, and let us pray it may be soon, find their occupation gone. The sagacious officers of this corporation are therefore already turning their attention to utilization of their plant and special products in the constructive arts of peace. They have begun the manufacture of artificial leather, lacquers, celluloid, picric acid for use in dyeing, heavy chemicals and many individual dyes and intermediates.

In a less acute sense but no less surely similar problems confront manufacturers everywhere. They confront you. And their solution in anything but a hit-or-miss and half-way fashion involves intensive industrial research.

The steady spread of prohibition brings the problem home to every brewer and distiller on the continent. Must their great plants stand idle or be scrapped? Or can their special equipment be utilized in new and profitable ways which are within the law? Without attempting to solve the problem here and now I may suggest that cold storage, malt extracts, malted milk, clarified cider and grape juice and the production of concentrated fruit juices, by freezing methods, all merit careful consideration by the brewer, while the distiller may well turn his attention to industrial alcohol, solid alcohol, dealcoholized wines, yeast, essential oils, ether and the manufacture of varnishes.

Canada's Splendid Opportunity.

In its broader aspects the application of industrial research to the development of the natural resources of the Dominion and the promotion of the welfare and prosperity of its inhabitants holds out a prospect calculated to fire the duldest imagination. In Canada less than ten million people have come into an inheritance as rich in potentialities of wealth as that which has enabled one hundred millions in the United States to take first rank among the great producing nations of the world.

Furthermore, the development of the United States proceeded under the methods, knowledge and financial resources of the 19th century, whereas Canadians in the development of their inheritance have only to reach out and utilize the experience, methods and resources of the 20th century. They

have only to study the industrial history of the United States to learn what mistakes to avoid and what good to seize upon.

In industrial experience and scientific resource you Canadians stand to-day a century ahead of the ten million people who one hundred years ago were working out by crude and wasteful methods the industrial development of the United States.

The three factors which, as it seems to me, are essential for the industrial development of Canada are men, capital and research. Men may safely be trusted to follow the call of opportunity and probably never will that call sound more clearly than in the ears of those millions in Europe who after the nightmare of this war awake to find themselves heavily burdened with its paralyzing costs.

The immigration of money is equally needful to your prosperity, but not so easily assured as the immigration of men. There will be plenty of work at home for the pound sterling, the franc and the rouble, and I therefore urge you to devote yourselves to encouraging the immigration of dollars.

The control and expansion of the third factor which I have mentioned as essential lies wholly within your own hands. Moreover, in proportion as you avail yourselves wisely and generally of the findings of industrial research, so will the immigration of men and dollars follow the opportunities thus created. Well directed and protracted research is needed for collecting and correlating the widely scattered information regarding your resources, for demonstrating the value of the specific raw materials which you possess in such profuse abundance, for developing processes for their utilization, and finding new uses, and hence new markets, for the products made from them.

Some Early Results in Canada.

My own organization has, for example, already demonstrated that gasoline in commercial quantities may be extracted from the natural gas in certain fields in Alberta. We have shown that the waste flax straw now burned by your western farmers can be made to yield the highest grade of paper stock, for which there is at present an insistent and general demand. We have undertaken a very comprehensive research to demonstrate the feasibility of utilizing in various lines of industry the enormous tonnage of cereal straws now burned each year upon your prairies.

These things are a mere beginning. They hardly touch the fringe of opportunity. We have, however, entered definitely and seriously upon one phase of the great work in which through Lord Shaughnessy we have been privileged to assist. We are now organizing the Natural Resources Survey, which has for its initial purpose the collection, abstracting, classification and correlation of all available information regarding Canadian resources in such form that the essential facts regarding any of them may be almost instantly available to all those in position to use the information to advantage. Any adequate development of the plan involves covering a field so vast and the sifting of a mass of detail so immense that no single organization can expect to cope with it without the nation-wide co-operation of institutions and individuals in position to assist. We shall call confidently upon your association and upon many of you as individuals for this assistance. While this work is begun at the instance of Lord Shaughnessy and will be carried forward under the auspices of the Canadian Pacific Railway, it is conducted for the benefit of no single corporation, but in the interest of the whole Dominion and of each of you individually as Canadians and manufacturers.

It is the misfortune of the United States that it has no Canadian Pacific Railway to initiate and support, especially in the South, a work of such magnitude and far reaching benefit. Labor values and brain values constitute the most

profitable exports for any country. The export of the brains themselves is an altogether different matter and the United States lost heavily on the day when Thomas Shaughnessy came to Canada.

In conclusion let me point out that if the community is to receive the full benefits of industrial research the laboratory must be close to capital and closely in touch with industry. The results of research may long lie dormant and unappreciated unless they are placed effectively before those who are able to make use of them, and it is with the expectation of rendering efficient service along this line that Arthur D. Little, Limited, of Montreal, begins its work under a Dominion charter.

INFLUENCE OF HOURS ON OUTPUT.

Memorandum No. 12, issued by the Committee of the Ministry of Munitions on the health of munition workers, contains a report by Dr. H. M. Vernon on the relation between output and hours of work. Experiments covering a considerable period fully justify the recommendation previously made by the Committee that the hours of work should not exceed 65-67 hours for men and 60 hours for women; in many cases even a smaller number of hours per week would give the best results. Some striking examples of the effect of continued fatigue in diminishing output are recorded. Thus, in the case of some youths of 14-17 years, working on steel base plugs, a rise of 16 per cent. in hourly output took place after the Christmas holidays, and subsequently when the hours of labor were reduced from 70.3 to 57.0 an increase in total output of about 19 per cent. was reached. These and other results, remarks *The Electrician*, show that it is possible to be engaged for longer hours and yet do less work.—*Scientific American*.

THE RECEPTION MANAGER.

The modern office-boy, indeed, is not an office-boy at all, but a man, and an expert executive. He is the reception manager. Just as the correspondence department is one gateway of money into the plant, so the office of the reception manager is another gateway. This official is an encyclopedia of the business—a diplomat, an artist.

In Cleveland the writer sat for an hour one day and watched a reception manager at work. Probably a hundred persons called.

"The standard on which I work is this," he said to me: "No person shall be allowed to leave this office with a feeling of resentment against the house."

In and out of that office, with quiet and deferential bearing, moved the real office-boys, as directed by the reception manager. They are selected boys, and at certain hours during the day they attend classes within the plant; and they study, among other things, the money-making art of personal contact.—*Dodge Idea*.

A GUARANTEE.

Occasionally a manufacturer gives his customers more value than he undertakes to give. Such is the case with the Paterson Mfg. Co. In the November issue of *INDUSTRIAL CANADA* their advertisement contained a guarantee of their products for ten years. We are advised that the actual guarantee is for twenty years. Purchasers will be glad to learn that their expectations will be so much more than fulfilled.



BOARD OF COMMERCE BUILDING, DETROIT
 Offices of the Executives' Club are on the Third Floor of this Building

CO-OPERATION FOR GREATER EFFICIENCY

How the Executives' Club of an American City Seeks to Advance the Idea of Industrial Efficiency

By W. J. DONALD, Ph.D.

IT is perfectly evident that the war has produced the most serious shortage of labor that Canada has ever experienced and at a time when many manufacturers are producing supplies that are absolutely essential for the preservation of our national existence. The situation is so critical that the immediate advantages of making what labor supply is available count "100 per cent." need little explanation. In all probability, too, the seriousness of the problem and the value of a solution or of amelioration will be much increased before hostilities cease, before the overseas soldiers return, and before the unprecedented demand for government war supplies decreases.

Doubtless, too, the post-war period will bring its problems. A readjustment of price levels, unemployment, and the re-absorption of returned and partially disabled soldiers into our national and industrial life are each the subject of some anticipatory thought to-day. Many companies will gladly avoid failure by practicing "efficiency and economy."

There is evidence that Canada needs efficiency. Here is an interesting and even startling pair of cases. The president of a Canadian bank advised a certain industrial company that, if it reorganized its business methods, its credit might be considerably improved. The implied threat was discerned and the company has therefore employed an efficiency expert to completely reorganize the business. Doubtless other companies are facing similar advice. In the other case, it was found that parts of time fuses were received and given out by the stores department by weight rather than by number and that as a result pieces were disappearing by theft. In

the same plant it was found that trays of completed work found their way back to the work-room and, when presented a second time by a workman, were paid for a second time. Obviously there is no doubt about the need for and value of a study of and application of modern efficiency methods in Canadian factories.

To increase production thereby would not only be profitable; it would also be the patriotic thing to do while the war lasts. To effect economies thereafter in the same way will be patriotic and probably also necessary for many Canadian plants.

The Efficiency Movement Elsewhere.

The eagerness of the modern manufacturer for information on the principles underlying business is perfectly evident. The existence of correspondence and reading courses such as those provided by the Alexander Hamilton Institute, by La Salle Extension University and others, as well as the growth of colleges of commerce and administration at Harvard, Yale, Columbia, Chicago, Dartmouth, Ohio State, New York, Michigan, Texas and other universities is convincing evidence.

Quite as significant is the establishment of efficiency societies throughout the United States and Canada. In 1912 the Efficiency Society was formed in New York and it had an immediate success in enlisting the interest of the country. Its membership doubled every month until it had 1,100 members in 37 states and 11 countries. Managers, clerks, social workers, ministers, professors, journalists, and government

officials all joined in the study of the new science of efficiency. There is now a Western Efficiency Society in Chicago, a New England Efficiency Society in Boston, and organizations called Efficiency Societies or Executives' Clubs in Rochester, Buffalo, Detroit, Milwaukee, Springfield, Mass., Los Angeles, and Philadelphia. The Executives' Club at Detroit, the most interesting and effective of all, is the model of the plan discussed here.

What Has Been Accomplished; A Few Examples.

There are many disputed points and unsolved problems in the management of industries which can only be cleaned up by means of an exchange of experience. In the matter of settling standard times for workmen's operations, for instance, there is a wide variation in technique which must be reconciled before time study can be regarded as truly scientific. There are differences of opinion as to whether to make observations from continuous running time or from time snapped back to zero for each element. Some people differ as to whether time should be taken on an exceptionally fast operative or on a slow one, on regular work or on specially prepared work. There are many different kinds of wage payment and if managers expect workmen to leave it to them to decide which system of pay shall be adopted, it is incumbent upon them to discover by common counsel the very best method of payment, and if different systems of pay must prevail in different plants, managers must be ready to explain adequately the reasons for the variety of systems. There are also great variations in cost systems and in methods of scheduling production. Yet in respect of each of these it seems possible to develop a standard practice.

At the present time many plants are going over from the old military type of organization to the functional plan and even functionalized plants are being reorganized in accordance with new divisions of function and departmentalization. At the same time a whole new theory for the conduct of employment departments is growing up and a new attitude and a new conscience are developing with regard to work for the welfare of employees. It is under these circumstances, with these thoughts in the air, that an Executives' Club has a great opportunity as the best method yet devised for exchanging experience about modern efficiency methods in industry.

Some of the definite results that have been obtained from the study and application of scientific management include the following:

1. In Detroit eight member companies of the Executives' Club have made fundamental changes in their organization as a result of ideas exchanged in the club.
2. One plant in Detroit, which had established a complete system of scientific management, before it became a member of the club, nevertheless reorganized many of the functions and departments in accordance with the standard practices that have been gradually worked out in the round table conferences of the club.
3. Ten Detroit plants have established employment departments since joining the club and similarly twenty-two have appointed welfare managers.
4. One Detroit plant saved \$6,000 and another \$8,000 as a result of a single idea picked up in one of the group meetings.
5. Detroit plants have the staff of the Executives' Club train their executives for special or new work.
6. By a number of scientific methods, one manager secured the aggregate effect of increasing the earning power of the payroll 80 per cent.
7. By grouping the work-planning functions, formerly exercised by the department foremen and others, into one

department, a Detroit factory was able to run under scientific management with less expenditure for overhead than before it was introduced.

8. By taking from foremen the right to discharge workmen, a leading Detroit factory reduced the annual turnover of labor 50 per cent.

9. A large factory by reducing the work day from 9½ to 8 hours, without charging piece rates, got as much work done as before.

10. It is the custom in Detroit automobile plants to look beneath the prices submitted by parts makers and to enter into a detailed study of the methods of manufacture in accordance with which the product is to be got out. These plants insist that the most modern systems be followed in order that their sources of supply will be amply secured. One plant actually joined the Executives' Club because it was told that it could not have a certain large contract unless it did bring its methods up-to-date on the basis of the information it could get by joining the club. Another plant already in the club was told that it would not be able to hold an important contract unless it brought itself into accordance with the best practice in force in Detroit plants.

Organization of an Executives' Club.

An Executives' Club is a voluntary Association of a number of industrial companies. Plants, not individuals, are members. Each member pays a certain sum—in Detroit, \$150—per year toward the support of the staff activities.

The Detroit club, the model of all modern efficiency societies, was organized in March, 1914, with six executives guaranteeing support for a trial of three months. At that time the club was an experiment. Mr. E. St. Elmo Lewis, the advertising manager of the Burroughs Adding Machine Company, and Mr. Byres H. Gitchell, Secretary of the Detroit Board of Commerce, were the real organizers. Mr. Boyd Fisher, then secretary of the Efficiency Society, was secured as manager and vice-president. Executives' Clubs are no longer in the experimental stage. Success is now assured them. The Detroit Club has now a membership of over forty plants and a staff of five. It is the most widely known and by all means the most efficient and effective branch of the work of the Detroit Board of Commerce.

"The object of a club of this kind," says Mr. F. F. Beall, vice-president of the Packard Motor Car Company, "is to study and promote the science of management in order to make the member plants more efficient and to place the best experience at the disposal of all plants in the city. It is an organization of managers seeking to learn to accomplish the things they do in the very best way."

When a company joins an Executives' Club it is brought immediately into contact with all phases of the work. The responsible executive of the company is named as a member of the Executives' Club proper. He is asked to furnish the names of all the principal functional executives such as cost accountant, employment manager, etc. All these men are then divided into or assigned to functional groups and each group, including the general managers' group, holds two meetings a month.

The new member of an Executives' Club also receives promptly a loose-leaf note book of some or all of the back reports of the club and a binder for reports that are henceforth to be issued. The new member also receives the service of the staff in two respects, firstly, by being able to call upon a staff member to investigate some problem in his plant and secure information as to how to solve it, and secondly by being able to consult such printed and carded information as has already been filed in the office of the club.

The local organization in Detroit has already a larger staff than any national efficiency society and the new member going into the club soon discovers that he is in contact with a live and vital organization.

Functional Groups.

As we have said before, the functional type of management has been growing. In accordance with this theory, whatever is common to all departments may be made a division by itself. Thus, one man will have charge of accounting for the whole plant, another man may have charge of the production scheduling, and another man will have charge of all the standards for machines and workmen's operations.

The older type of efficiency society was organized on the military plan. Buyers, cost accountants, employment managers and others came together to discuss general or special topics that had little or no interest to many. The Executives' Club of Detroit, in contrast, paralleled the functionalization of industries with functionalization of study by organizing groups to correspond to the different functions performed in a plant. This has proven to be an excellent method of organization. Those engaged in similar work in different plants have a kindred feeling which promotes sociability and freedom of expression. They discuss the details of their work with more freedom, because they are dealing with the same problem and have the same interests. Only cost accountants meet together to discuss problems of cost accounting and similarly with the other groups. The meetings go much farther into detail than would be possible in presenting the subject to an audience of mixed interests.

In Detroit the following groups have been organized to consider the problems involved in their corresponding functions:

1. Executives' group (proper); composed of the chief representatives or managers of the plants. This group is really the executive of the club and it appoints the club's officers. It has for consideration the whole general field of scientific management.

2. The Production Managers' group; composed of men in charge of production methods in member plants. The field of study covered is very large and important, including prac-

tically everything with regard to manufacturing not covered by the standards and cost accountants' groups. The first task to which it addressed itself was the establishment of a common terminology for use chiefly in the meetings but also in the plants themselves.

3. The Manufacturing Standards' group; composed of men who set standards for machines and all other standards in the plants. Its chief purpose is "to develop and standardize the science of time study with regard to its effect on efficient management." Standards in respect of grinding, handling material and men, speeds and feeds on all equipment, tools, tool steel, bonus methods, departmental expense, floor space for machinery, and foundry work are set. The staff has prepared in this connection a book of "Detroit Standards."

4. Cost Accountants' group; composed of men in charge of the cost and commercial accounting in the companies composing the Executives' Club. This group has considered "How

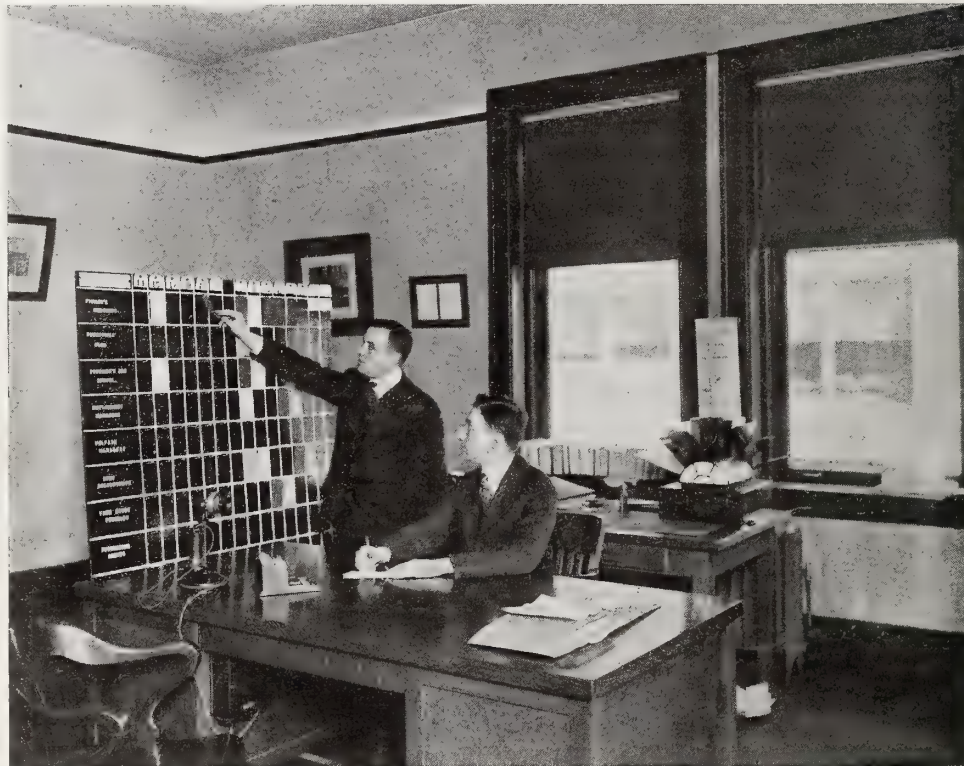
to Prepare Cost Reports for Executives," "The Five Principal Methods of Distributing Overhead," "Budget Systems," and similar topics.

5. The Employment Managers' Association; composed of the employment managers and their assistants. This group aims "To study the science of hiring efficient workmen and the methods by which good workmen may be retained and improved." The problem of the turnover of labor has received much attention. "How to Handle the Floater,"

and the question of allowing foremen to recommend men are a few of the other questions considered.

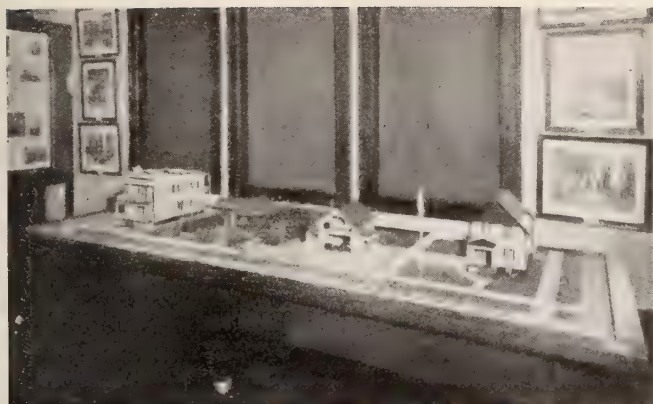
6. The Buyers' Association; composed of the purchasing agents of the member plants. The science of buying, the forms and methods used in the plants (but no price information), are the subjects of discussion.

7. The Industrial Welfare Managers' Association; composed of the men and women in charge of the welfare of employees of member plants together with prominent welfare workers and other authorities on social work. The scope of study of this group is wide indeed. The association has working committees on sanitation, factory lunch rooms, health of factory employees, mutual aid associations, fire prevention, industrial education, profit-sharing, voluntary minimum wage, and on unemployment, and it might have many more such committees. The purpose of the group is "To study the welfare of employees with regard to its effect upon efficient management."

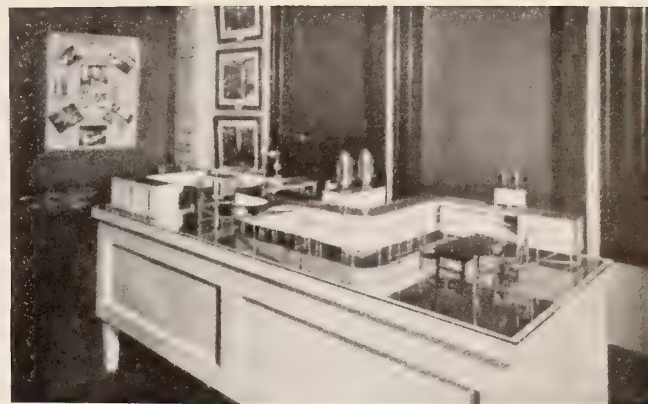


EFFICIENCY BEGINS AT HOME

"Office Tickler" in office of Mr. Boyd Fisher, Vice-President of Executives' Club



Model contrasting ordinary with desirable homes of Detroit's working men. Part of Industrial Welfare Exhibit



Model of ideal cafeteria used in some Detroit factories. Interesting feature of Industrial Welfare Exhibit of Executives' Club

There is no real reason, however, why there might not be added to an Executives' Club elsewhere than in Detroit the following other groups:

1. A Traffic Managers' group; composed of the traffic managers and chief shipping clerks of industrial plants. The traffic department of the Detroit Board of Commerce has something similar in the form of a transportation school, which to my mind could be more profitably conducted in conjunction with the Executives' Club. There is ample room for the study of routing, rates and packing.

2. A Sales Managers' group; composed of the sales managers of the member plants. This would to some extent correspond to, or it could promote as an adjunct, a salesmanship club similar to the renowned Salesmanship Club of Detroit affiliated with the Detroit Board of Commerce. Such topics as "Sales Letters" and "Choice of Salesmen," as well as many others might be profitably discussed.

3. An Advertising Managers' group; composed of advertising managers of industrial plants, but not including the representatives of advertising agencies.

4. A Foreign Trade Managers' group; composed of the men in charge of the foreign trade of member plants. Probably no other group could do a more important work, for foreign trade efficiency in Canada is still in its infancy.

Each group should have its own simple constitution and list of officers. Some of the Detroit groups charge monthly dues of twenty-five or fifty cents,—just sufficient to ensure continued interest and to cover the cost of entertainment together with special stenographic and other expenses connected with the monthly or semi-monthly meetings. Each group has its own membership, programme, literature, entertainment and special committees. Attendance at the meetings is for the most part guaranteed by the pressure put on the executives by the managers of the member plants themselves. A manager's suggestion in this respect may actually become a threat.

The Work of the Staff.

In Detroit, Mr. Boyd Fisher, the vice-president of the Executives' Club, is really the managing-director. He transmits to the subsidiary groups the wishes of the managers themselves as formulated by the executive of the club. The staff includes also the office manager, a mechanical engineer, a librarian and a clerk.

The chief duty of this staff has to do with the conduct of the meetings of the groups. But in addition the staff conducts plant conventions, open meetings for foremen, co-operative studies in plants, reports, an information service, an em-

ployment service (which will shortly be discontinued) and co-operates with other social agencies in the city.

The plant conventions have about them even more of the practicality, definiteness and concreteness that characterizes the round table conferences of the groups. Few men have the imagination to enable them to really understand another man's conditions of work and it has become apparent in Detroit that what appears in the conferences to be differences of principle are only differences in method made necessary by different conditions in the plants. The plant conventions, which are held once a week, give those who attend a clear picture of the conditions with which the functional foremen in each plant have to deal. For instance, when a time study is in question the delegates to the convention go out into the shop with the time study man who makes actual time studies upon workmen in productive operations. The delegates stand round and watch both the operations and the time study. The group then retires to the assembly room and is informed in a talk of the principles applied in compensating workers in that shop. The process is similar in respect of other groups.

The open meetings for foremen are held once a month. Each plant which wishes to benefit may receive numbered tickets according to the guarantee of each manager on the number of men he will send. The Executives' Club may then report the attendance to the manager. The purpose of the meeting is in the main to give the department foremen something of the perspective of the managers themselves; in other words it aims to make the men who have risen from the ranks think and feel like managers. A man of authority on the subject discussed is secured each time as a speaker.

Co-operative study is implied in the fact that any member plant may present its knotty problems to its fellow-members through the staff of the club. In Detroit, after questions are submitted to the staff, a member of the staff visits the plant, records observations of actual conditions, visits other plants in the club to secure suggestions for improvement and then offers a report. This report is presented to the open meeting of the group which most naturally deals with the problem. For instance such a report was made and a discussion on the internal transportation problem of a member plant. How valuable such a piece of work might prove in Canada, one would not need to argue with anyone who had studied the internal transportation problem of a certain Canadian iron and steel and munitions plant where the continuous process could scarcely be discovered.

The reports on phases of management made by members of the staff of such a club can be presented to members of the

club. In Detroit the reports made in the first year filled four loose-leaf note-books. Whenever anything new is found the discovery is celebrated in a report to the club. Incidentally one of the functions of a staff is to visit plants in other cities with a view to learning the latest successful ideas elsewhere. Reports are usually confidential and only those reports which are largely impersonal and of a general character should ever get beyond the members of the club.

A very complete library of books, magazines, pamphlets, clippings, charts, forms and models, should be collected for such a club. Much of the material can profitably be briefed on 5 x 8 cards, classified and indexed for ready reference.

Finally it may be said that there are ample opportunities for co-operation with agencies outside of the club. In Detroit the club has co-operated with the Cass Technical High School,

it helped to solve the serious unemployment problem of 1914-15; it co-operates with the Employers' Association by referring applicants for executive positions to its employment bureau, and with the Social Executives' Club of Detroit in an effort to improve the technique of social service. The demands upon the staff and upon the groups are apt to be far beyond its resources in funds and time.

A Challenge.

No one will dispute the need for some kind of efficiency society, and a study of the movement will reveal the fact that the plan we have outlined, based on the famous Executives' Club of Detroit, should prove eminently successful. It simply remains to put Canadian progressiveness and energy to the test in the working out of details.

THE MODERN TENDENCY IN FACTORY CONSTRUCTION

By A. B. KERR

THE requirements of the past two years have demanded shelter for machinery and workmen in the shortest possible space of time, and have promised abnormally large returns, which in many cases did not seem to depend upon the character of the building in which the work was accomplished. Never in the history of Canada has there been such a consistent demand for factory space as at the present time. During this period the call for buildings to house new and expanding industries has been unprecedented, and as a result we now see over twenty-five million dollars' worth of factory buildings in course of erection. Of this huge amount, approximately four million dollars' worth are in the city of Toronto.

This abnormal increase in building for the accommodation of manufacturers is of absorbing interest to all. The problem that confronted the Canadian manufacturer and his architect was how to produce a building in the shortest possible space of time. In the early stages of the war many of these factories were found cropping up all over the country, each dependent, to a large extent, upon the continuance of the war for its future existence. For that reason a large number of them erected during that period were of a temporary nature, and were erected as an investment with the greatest possible haste and in the cheapest manner, in order that the returns upon the investment might be immediate and generous. This necessity caused a mushroom growth of flimsy shacks, which will be abandoned when the war terminates. On the other hand, the money these makeshift factories have brought in has undoubtedly enabled many firms to erect modern plants for the production of materials that are staple in normal times.

Speed an Important Factor.

Many manufacturers are beginning to turn out a number of products which were previously imported, and the greater majority of these have adopted industries that will become permanent after the war. "War orders" called for immediate delivery. Speed was the all-important factor, and yet, in spite of this unusual impetus to industrial building construction, many of these buildings are of a permanent nature. This has been brought about by the use of reinforced concrete, its one real advantage being its rapid form of construction, so that to-day ninety per cent. of the new factories in course of erection in Canada are of reinforced concrete.

A glance at this new type of factory building is convincing proof that their designers have been quick to appreciate the advantages offered by this new form of construction. The employment of this type of structure has resulted in a great saving as compared with the steel beam and stanchion, and also a saving in space. The effect this has had upon the architectural design is to further increase the spans of openings and distances between points of support by the introduction of reinforced concrete beams, and also to reduce the superficial area of the vertical supports by the use of reinforced concrete pillars.

It may be thought by some that in the use of reinforced concrete the architectural beauty of the building is lost. While in some cases this may be true, the great majority prove that a judicious use of brick, terra cotta and projecting cornices, produces a building of exceeding simplicity and rich in architectural beauty. A notable example of this new type of structure is to be found in the new factory of the William Wrigley, Jr., Company, Ltd., on Carlaw Avenue, Toronto.

The almost perfect resistance offered by reinforced concrete to the effects of fire has had a great deal to do with its popularity, and the Canadian architect would do well to become acquainted with all its properties, and also of the many building materials at hand, so that he may be better able to make use of the same.

Good-Looking Buildings Desirable.

The modern policy of publicity also has been largely accountable for the improvement. Situated by railroads, as most factories naturally are, there is an excellent chance of prepossessing the thousands of people that pass daily in favor of an article that is manufactured in a clean, well-lighted, sunny building, and so we find the modern manufacturer insisting upon plenty of sunlight and, as a further means to that end, the use of steel sash.

Many manufacturers realize that a well-designed building, and one that possesses architectural merit, is a real asset to their business. Artistic qualities imparted to a building do not necessarily mean an increase in cost. The manufacturer of to-day is a convert to the new order of things. He has been compelled to abandon the brick and steel construction to a large extent, owing to the high cost of steel and the lack of skilled labor, but he demands something more

than the old type of mill construction. He desires a building of pleasing appearance and economical in cost. When speed is not the all-important factor and is more the result of normal requirements, more time can be given, and as a result factories can be erected which are a real credit to their designers and owners.

An abnormally large number of buildings were erected in 1915 which represent to an unusual extent the work of contractors and construction companies, whose chief aims both on behalf of the owner and themselves were speed and immediate profit, and who did not thoroughly appreciate the added value which might readily have been given to the buildings without sacrificing either of the considerations mentioned or adding materially to the cost, by the employment of really competent architectural designers.

Value in Artistic Structure.

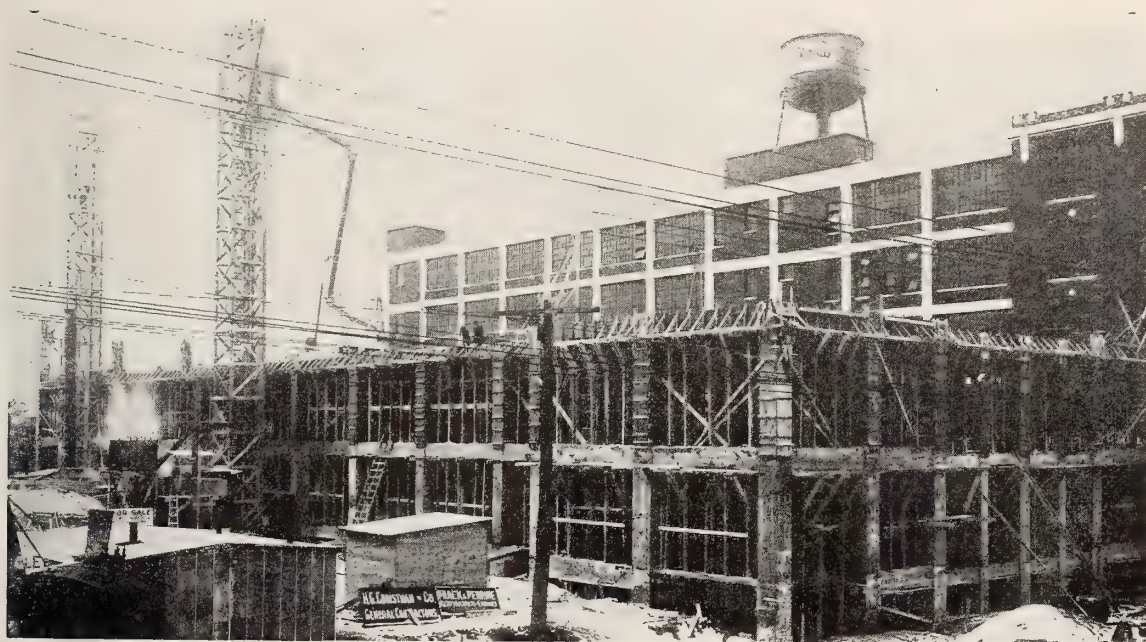
It is readily demonstrable that a manufacturer receives greater value per dollar invested in a building presenting

ally of flat-slab design, with no beams projecting to cut off daylight. The slabs vary in depth, according to the load they are destined to carry. Circular, spirally-wound hooped columns, with flaring capitals, are generally used, and will be found in the factories mentioned. The fireproof qualities are carried out in all parts, even to interior partitions, which are generally metal lath.

A VALUABLE DIRECTORY.

Volume Dealing with the Lumber Industry, Published in Vancouver.

What will undoubtedly prove a useful source of information on British Columbia's great lumber industry has just made its appearance in the shape of the "A. B. C." Lumber Trade Directory and Year Book, 1916-17. This volume is the



PROGRESS ON THE NEW WM. WRIGLEY JR. CO.'S FACTORY IN TORONTO

an artistic appearance and surrounded by a pleasing environment, than he can possibly obtain from one not possessing these qualities, regardless of the economy exercised in its construction. Manufacturers have not been slow to realize this, and the buildings erected in the past year, or now in course of erection, have been carefully planned with a view to architectural beauty.

Excellent examples of reinforced concrete construction are now in course of erection, and chief among these may be mentioned a two-million-dollar plant for the William Davies Company, Ltd., Toronto, and a seven hundred and fifty thousand dollar factory for the Goodyear Rubber and Tire Company, Ltd. The T. Eaton Company, Ltd., have also adopted this type of structure in several new factory buildings in Toronto, now in course of erection, which will cost about a quarter of a million dollars. A five-million-dollar plant for the International Nickel Company at Port Colborne, Ont., and a million-dollar plant for the British Chemical Company at Trenton, Ont., are also under way.

The floor construction in this type of structure is gener-

ally of flat-slab design, with no beams projecting to cut off daylight. The slabs vary in depth, according to the load they are destined to carry. Circular, spirally-wound hooped columns, with flaring capitals, are generally used, and will be found in the factories mentioned. The fireproof qualities are carried out in all parts, even to interior partitions, which are generally metal lath.

Its contents fall under twelve heads. First comes information about the Forest Branch of the Department of Lands; then a list of associations connected with the lumber trade. Next we have a complete list of the lumber and shingle manufacturers in British Columbia. A fourth section comprises the logging companies; mills operating camps and shingle bolt cutters, while a fifth lists the lumber wholesalers, log brokers, and timber cruisers. A list of towing companies follows with tug boats and rates. Foreign tariffs; lumber buyers in foreign markets; timber laws of British Columbia; technical and statistical information regarding British Columbia wood, etc.; lumber trade publications and a directory of mill and camp supply houses, complete the contents of a most comprehensive and informative volume.



Progress of Development Work at Smooth Rock Falls, Ontario

EXTENDING INDUSTRY NORTHWARD

A Visit to the Site of a New Enterprise in the Wilds of Northern Ontario

By W. A. CRAICK

LAST spring, a wild cataract pouring tumultuously over a great smooth hummock of rock; this fall, a torrent subdued,—bound and constrained by a sturdy coffer-dam slung far across the bed of the river. May, a region, rough and uninhabited, clothed right down to the edge of the water with virgin forest; in November, a vast cleared space echoing to the sounds of locomotive and sawmill, the drill and dynamite. Such, in a word, is the development now in progress at Smooth Rock Falls, far north in the wilds of New Ontario.

The power plant and pulp mill of the Mattagami Pulp and Paper Co., is the first big industrial enterprise to be launched as a direct result of the building of the National Transcontinental Railway across the hinterland of Northern Ontario and Quebec. Other smaller undertakings,—sawmills, mines, etc.—have been started here and there, and there is promise of other important developments, but to date the harnessing of Smooth Rock Falls and the erection of the proposed 100-ton sulphite mill are the big things along the route of the new railway.

The Mattagami River, which by the way flows through the famous Porcupine mining field, crosses the National Transcontinental on its northward course about thirty miles west of Cochrane. Our party were run out to the river by track machine, making the thirty-mile trip in about an hour. Just short of the big steel bridge that bears the railway across the water, a spur line built by the Mattagami Company strikes off in a northerly direction for

the Falls. The distance is just a trifle short of three miles. Recalling that only a few short months ago there was nothing but wild untrodden forest on either side of the railway, the progress that has been made towards the establishment of a big industry here is remarkable. First, there is the site of the model village, which will be the home of the pulp mill operators when the machinery gets going. Already streets are laid out and lighting arranged for. Beyond it, and nearer the river, is the camp of the contractors, a small town in itself, with rows of well-built houses for the accommodation of the workmen and office staffs.

At the time of our visit, preparations were complete for pouring the cement into the dam and the foundations for the pulp mill. Everything was arranged to carry out the operation economically and expeditiously. A towering wooden elevator, with long pipes for discharging the cement, rose

high from the bed of the river. To the mixers at the foot of the elevator, the materials,—sand, gravel and cement,—were carried from the river bank on three tracks, each communicating with its own source of supply. Near at hand a busy sawmill supplied the quantities of lumber that were needed in constructing the coffer dam, moulds for the main dam, and the frameworks of the numerous buildings all around the clearing.

The falls themselves have a head of 45 feet of water and the power plant is designed to develop 12,000 horse power. The Company owns two additional powers fur-



The great mass of rock, which gives its name to the waterfall

ther up the river at Yellow Falls and Island Falls, which furnish them with another 12,000 h.p. later on. Their timber limits, which extend for a considerable distance southward on both sides of the river, contain about 900 square miles and will yield, it is estimated, about three million cords of spruce pulp wood. The enterprise represents an investment of about two million dollars.

The men behind the company are Duncan Chisholm, for-

merly of Colorado Springs and a well-known figure in mining circles, who holds the office of president. E. P. Shooove is vice-president. R. B. McKelvie, of Haydon, Stone & Co., New York, and W. D. Ross, Toronto, directors of the Nova Scotia Steel & Coal Co., are members of the board. Lt.-Col. D. M. Robertson, Toronto, is secretary, and S. R. Armstrong, formerly vice-president and general manager of the New York and Pennsylvania Paper Co., is general manager.

THE FOREMAN'S PART IN "SAFETY FIRST"

(*Safety Engineering.*)

THERE are three good reasons why a factory foreman should participate in safety work earnestly and actively:

1. Because of its humanitarianism. "There is," according to Ida Tarbell, "nothing so valuable as the man. The stronger, the longer-lived, the happier, the more ambitious he is, the better for mankind. Injury and death are the fruits of ignorance, recklessness and greed. A death toll is no part of a properly managed industry."

Loss of life and limb are not humanitarian by-products of industry. Nothing is so precious as a perfect body and health. The foreman should realize that the bodies and health of his men are of much more importance than the machinery they operate; that the flesh and blood of the "boys" is worth more than the castings and steel they handle. The foreman is in a special sense "his brother's keeper." He is placed not only to look after the upkeep and care of machine tools, but, in all better plants, also to guard the welfare of his human tools. A broken shaft or defective casting can be replaced, but a leg or arm, an eye or a life lost is lost forever, and no compensation ever fully compensates. Just as a father looks after the welfare of his dependents, so should department heads look after those in their charge. Let your "boys" realize that you are their "old man"; that the "old man" is genuinely interested in their welfare and is looking after them for their own good, and the foreman's task has been made much easier, and a long step taken toward improving the quality of the factory organization. No foreman should want his sleep or rest disturbed by thoughts of accidents to his men that could have been prevented.

Among the many splendid ideas worked out by the late Frederick Taylor we especially like his stand that a foreman should be a teacher rather than a driver, at all time ready to show his men how to properly perform their tasks. It is the business of every foreman to accept raw materials and turn out a finished product. Just so; department heads have to accept the raw material in labor, and are expected to develop the finished labor product, a competent, careful workman. The foreman has no certain means of knowing when he puts a new man to work if he is efficient or careless and a menace to his fellow workers. It is, however, expected of every foreman to take such a man in hand and teach him not only the technical side of his task, but also that carelessness will not be tolerated any more than defective output. Foremen should always remember that they are directly responsible for the recklessness of their men.

2. Because of its broad economy. We know that several hundred million dollars is wasted in this country annually by preventable accidents. That loss eventually comes out of the ultimate consumers, you and me. This cost is reflected in the price we pay for our beefsteaks, groceries and clothing, for our motor cars and gasoline. No one can less afford this than those who, through thoughtlessness and carelessness, bring it

upon themselves, the workmen. A thrifty man hates waste. To destroy a man's earning capacity by robbing him of his sight or his limbs is the worst possible kind of waste.

3. Because it is a good thing for the foreman and his employer. From a strictly business standpoint safety work pays. The efficient and intelligent foreman is measured not only by his ability to produce work satisfactorily as to quality and cost, but also by his ability to build up an organization and eliminate accidents. The foreman is, therefore, financially interested. It is just as important to the employer to reduce accident costs as it is to reduce costs along any other line. We would go even further and say that it is more important to the employer to reduce accident costs than along other lines. The dollar saved through accident prevention is infinitely more valuable to the employer than the dollar made through sales. And a dollar lost through preventable accidents is doubly dear.

The reduction of accidents lowers the employers' insurance rate, but how much more valuable is the increased good-will, the family spirit, the co-operation, the efficiency that follows where a consistent policy of carefulness towards one another is maintained. *Safety work pays.*

We believe Rudyard Kipling points out how this is best achieved:

"It ain't the guns nor armament, nor the funds that they can pay,

But the close co-operation that makes them win the day,

It ain't the individual, nor the army as a whole,

But the everlastin' team work of every bloomin' soul."

GETTING AWAY FROM BUSINESS.

A friend of ours visited us at Evelynacres last month. He came, he said, to "get away from business," and yet in our hikes through the country, our fishing expeditions, our boating and auto excursions, great ideas popped into his head just the way a squash flower opens. "Funny," he would say, "I never thought of that before at home." Many of us go into the country, to the lake, mountain or seashore, to "get away from business," but it is a question whether our business does not stay with us just the same in the unconscious action of the brain. At our desks we think up ways of increasing our business, think so hard sometimes that our hair either starts to fall out or else feels as if it were copper-riveted inside our skull, and not the slightest idea develops. Here we are in woods, on water, on road, and the ideas come thick and fast, ten to one altogether different from what we have been consciously thinking about. Lots of things, and many of them the best things, we get only by a change of environment, by relaxing and apparently renouncing.—*The Dodge Idea.*

IMPROVED ELECTRIC FURNACE EQUIPMENT

Description of the Various Items Entering Into the Mechanism of the Modern and Improved Installation

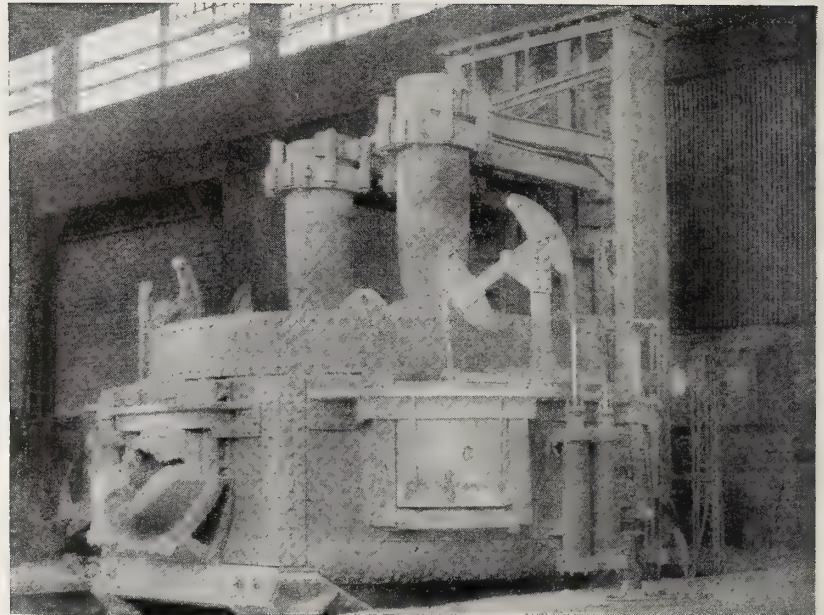
By P. B. BOYD

THE commercial field of the electric furnace is broadening considerably, due to the perfecting of furnace design and the reduction in cost of power. Formerly, electric furnaces were used in the steel industry, principally for the refining of high-grade alloy and tool steel. Now they are being used more widely for the refining of common grades of steel. This is made possible by the reduction in power costs, and the improvements that have been made in blast furnace design and the method of operating the furnace. In steel foundries, the electric furnace is being used largely for melting, though a limited amount of refining is done.

Many Improvements.

The electric furnace of to-day differs greatly from the older types; costs have been lowered by the use of larger furnaces, and improved devices for charging and tilting, larger electrodes, and automatic regulation, all tend to greater economy. Several different types of furnaces are in use. These are of two general classes, the induction and the arc types. The latter, in sizes from one-half to 20 tons, has been adopted almost exclusively in North America.

Complete electrical equipments for all classes of electric furnaces have been developed. These include, for the arc type of furnaces, assuming high tension alternating current is available, the following apparatus: Line protective equipment, switchboard, step-down transformers, furnace tilting motors, motors for adjusting position of electrodes, and



An arc-type electric furnace with a capacity of 60 tons of steel

a regulating system for the control of the electrode motors.

The protective equipment includes suitable lightning arresters, choke coils, disconnecting switches, and main line circuit breakers, the latter usually electrically operated and controlled from the furnace room.

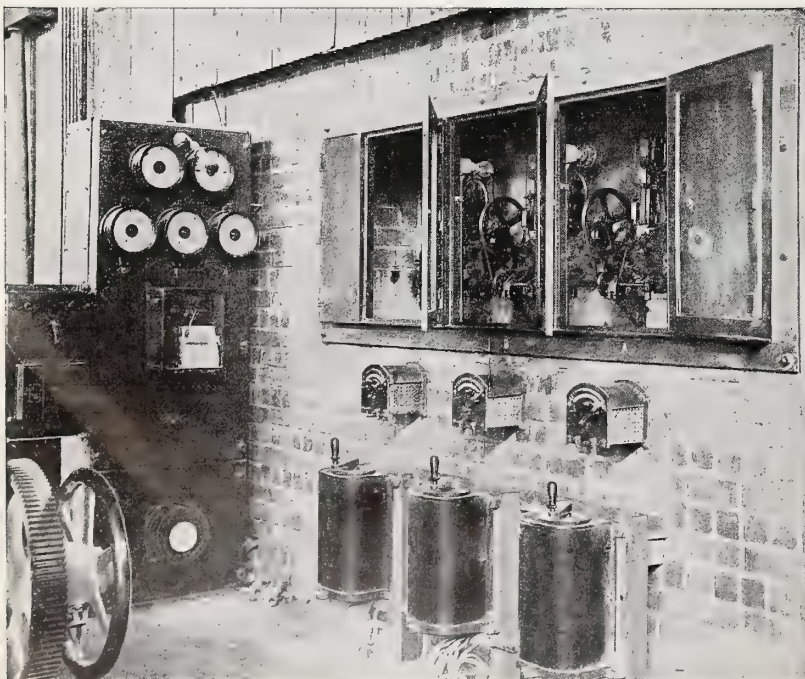
The switchboard usually has mounted on it a voltmeter, power factor meter, three indicating wattmeters or three ammeters, a graphic recording meter, and a watt-hour meter. Where direct current is not available for the electrode motors, a motor-generator with the necessary control panel is also required.

Transformers.

Transformers are required to reduce the supply voltage to a potential suitable for the furnace. Oil-insulated transformers can be supplied in either self-cooled or water-cooled types, in all capacities and voltages, and for frequencies of 25- to 60 cycles, single, two or three phase.

On all large electric furnaces of the tilting type, the tilting mechanism is operated by a motor. Either alternating or direct current motors with characteristics similar to those used for hoisting work are suitable for this service. The controller is of the reversing type and a motor brake is used to prevent over-travel of the furnace and hold it in any desired position. For this service the company has a complete line of both alternating and direct current tilting motors, ranging from 15 to 150 horse power, together with suitable controllers and brakes.

Where automatic control of the electrode is



A three-phase regulator installation—one regulator for each electrode

desired, a motor-operated hoisting mechanism is provided for each electrode. As the motors are mounted on the furnace which tilts, the bearings are built with special lubricating features. Shunt-wound, direct current motors are selected for this service, as a much simpler and more positive system of control can be provided than for alternating current motors. Usually, the motors are totally enclosed, their horse-power and speed depending upon the size and type of furnace.

Regulating System.

One of the greatest improvements made in the modern furnace is the feature of automatic regulation of the current. The object of the regulating system is automatically to maintain a constant current at the furnace. Among the advantages of automatic regulation are: Large saving in labor charges; more efficient utilization of the current, and reduction in the time required, resulting in maximum production, and, due to the more stable furnace conditions, the product is of a higher and more uniform quality. These improved conditions are obtained by means of the Thury regulator.

The Thury system is used on a large percentage of the electric furnaces now installed. It can be used with any arc furnace to maintain a constant current which can be adjusted through a wide range. It can also be adapted for maintaining a constant potential when desired. The equipment for the automatic control of a three-phase furnace consists of:— Three regulating equipments, including wall brackets; one countershaft, complete with pulleys and bearings; one motor to drive countershaft; three regulating drum controllers; three field regulators; three resistances, and two series transformers.

Damping devices permit the regulator to act only when necessary. Sudden changes and peaks of short duration will not put the regulator in action. This in itself is very important, as there is not only a great saving in the wear and tear of the electrode hoisting mechanism, motors for driving same, etc., but the current is kept more uniform by avoiding unnecessary regulation.

Work of the Electrode.

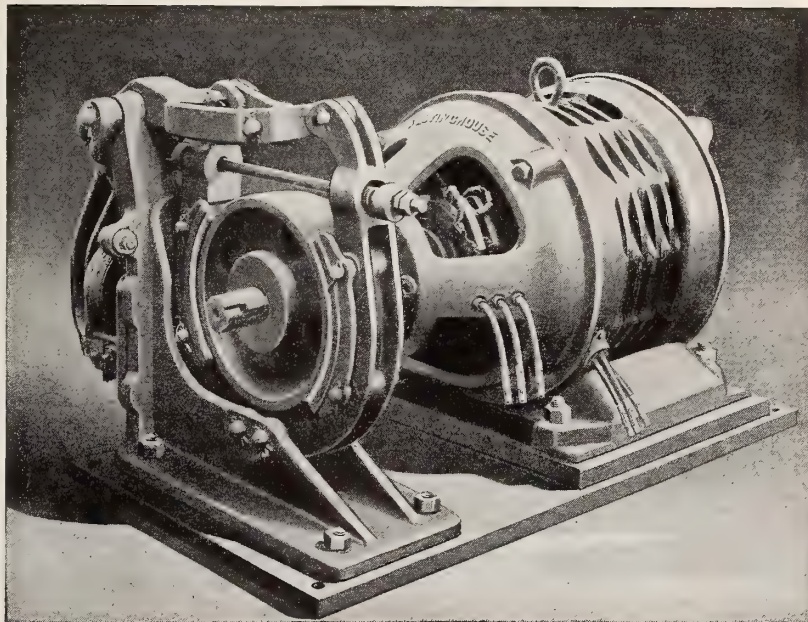
Each regulator controls one electrode. The regulator is controlled by a solenoid energized by means of current from series transformers in the main high tension circuit. The regulator in turn controls the armature circuit of the electrode motor to give it motion in either direction, or stop it, as required. This electrode motor operates a hoisting mechanism, which in turn raises or lowers the electrodes. The regulator can handle any amount of power for regulating purposes without impeding the free play of the controlling mechanism, which is only in contact with the power mechanism for exceeding short periods of time and is otherwise perfectly free.

Intermittent action of a contact-making arm prevents the regulation from being carried too far in one direction. Thus a high load power factor and a uniform current on the furnace is assured at all times.

PAINT AND CORROSION.

The average thickness of a coating of paint for iron and steel may be one two-hundredth of an inch, states an authority on the subject. In many parts, however, the coating may easily reach a thinness of one six-hundredth of an inch. If, therefore, a paint contains particles whose smallest dimension is one four-hundredth of an inch, it is obvious that the particle will stand out in a paint coating where the thickness of the paint coating is only one six-hundredth of an inch. Many particles of pigment classed as coarse or sandy lead are considerably larger in size than the size indicated by one four-

hundredth of an inch diameter, and these will project still farther through the paint film. Such coarse particles become, therefore, the weak point in the film, and corrosion may start around such particles. The paint film itself is weak at such points, as the coarse particles may not be completely encased in the oil of the film. For these reasons, concludes the authority, the superiority of a highly oxidized red lead is really due to its fineness. It is a better pigment. Its superiority, however, lies not only in the more continuous paint film it produces, but in its producing a



Motor-operated winch for raising and lowering the electrodes

better working paint—a paint that flows out well but will not run, sag, or weep.—*Scientific American*.

EFFICIENCY LITERATURE.

The importance of efficiency in business organization has never been so generally recognized as at the present time, and the subject presents an even greater field of development in the future. One indication of this is the increased volume of literature that is now available. We find the ultimate causes of this in the broad field of economics. The gradual absorption and development of natural resources, the exploitation of new fields of commerce, the increase of population, the higher standards of living and greater complexities of demands in modern life—these are but a few of the innumerable influences reflected in the industrial life of to-day. Transformed to some extent, these changes meet the manufacturer in the form of demands for more wages and better labor conditions, in the increased cost of materials, and in much keener competition in every phase of manufacturing and selling. He must either adapt himself and his methods to meet the situation, or suffer the consequences.—*The Dodge Idea*.



Erecting the steel trusses in place. The end of the building, ready to raise, appears in foreground



Exterior view of a steel factory building constructed of sections held together by a wedge lock

STEEL BUILDINGS OF PINNED PANELS

A Simple Means of Meeting the Demand for Increased Space Rapidly

(From the "Scientific American")

THE European war orders came with such suddenness upon American manufacturers that many of them were unable to meet the tremendous volume of business with their existing plant. Plainly it was a matter of adding new wings or buildings to their manufacturing plants; but how to do this and yet handle the business as per schedule was still another question, for the Allies were urgently in need of many of the supplies. Then again, the keen manufacturer was not slow to realize that this sudden rush of business was nothing short of a miracle; it could only be a temporary state of affairs, to disappear again at the conclusion of war in Europe. It would be foolhardy in the extreme to expend big sums of money for permanent additions to the plant when within six months, a year, or several years hence the business would return to its normal state of ante-bellum days. Yet the need for shelter of some sort for the workmen and equipment added to the plants to meet the war orders, was imperative.

The problem of the munitions of war supplies manufacturer, difficult as it may seem of solution, was met by American ingenuity in the form of portable, yet permanent, buildings constructed of pressed steel panels and units. It only remained for the manufacturer receiving a large war order to figure out the size of the shelter required to handle the work at hand, and then order the requisite number of panels, doors, trusses, and roofing members. These received, it was but a matter of unpacking the material and employing a few men to assemble the members into an ideal factory building. All the parts fitted with the precision, dispatch, and convenience of the familiar sectional bookcase.

Steel buildings are not a novelty; they were known before the war. And it must not be presupposed that their field of usefulness is limited to factories. As a matter of fact they

can be employed for any purpose where some form of shelter is required. The method of construction consists essentially of various pressed steel panels and units which can be assembled by anyone without special tools or equipment. By an ingenious, but simple device, consisting of a slotted key and locking wedge, the entire building can be fastened together in an incredibly short time. No holes need be punched, no rivets driven, and no bolts nor wire are used. An ordinary hammer is the only tool required.

The various panels used in the construction of the steel buildings are of standard size and interchangeable, permitting buildings of any size or arrangement of wall space, windows and doors. The solid wall panels are manufactured from heavy gage open hearth steel and formed under large dies operated by powerful presses. The corners of the panels are electrically welded to assure maximum strength and weather-tightness.

Light and ventilation are provided for by the use of glazed panels which consist of steel sash welded into the standard wall panel. The sash is complete with pivoting and adjusting devices as well as all hardware. It is claimed that the pivoted ventilator permits 100 per cent. ventilation, while the standard push bar and locking device allows wide variation in the adjustment of the ventilators.

Steel doors are furnished for the buildings, insuring fire-proofness and permanence. Doors are of standard size and furnished fitted into frame, so are interchangeable with solid and ventilated wall panels. Double and single doors are supplied with either solid or glazed upper panels.

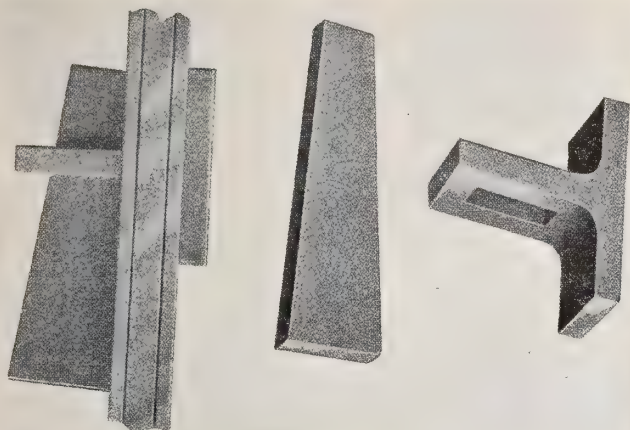
The roofs of the steel buildings are built up of special steel roofing plates so keyed as to assure absolute watertightness, so it is claimed. The roof plates are easily erected and quickly united. The roof is supported by standard steel



The interior of a steel building hurriedly erected to meet a sudden increase in business

trusses which are easily set and fastened in place. The truss is complete in itself, requiring no bolting nor riveting in the field, and is so braced as to give great rigidity to the building.

The advantages of the new steel building are obviously numerous. Although the buildings can be rapidly erected and taken down again, they are of a permanent nature as contrasted to the usual portable form of building. They are claimed to be absolutely fireproof and weatherproof. Not the least advantageous feature of the steel buildings is their



Simple locking device employed for holding the structural members together in a pressed steel building

By means of this simple wedge lock the panels and other members of a steel building are held together. An ordinary hammer is the only tool required in the erection of these structures; no holes need to be punched, no rivets driven, and no bolts nor wire are used. The building is assembled with the same ease as a sectional bookcase, and can be made to grow or shrink with the changing conditions of business if necessary.

flexibility; they can be enlarged or made smaller at any time, and the arrangement of the windows, doors, and ventilators can be changed at will. The buildings are adaptable to use as garages, contractors' buildings, factory buildings, hospital buildings, railroad buildings, mining and industrial plants, workmen's cottages, election booths, temporary school houses, summer houses, boat houses, work houses, and for practically every purpose where a permanent or temporary shelter is necessary.

VISITED WESTERN CANADA.

Austin A. Briggs, advertising manager of the Dunlop Tire & Rubber Goods Co., Toronto, returned recently from a business trip through Canada, including a visit to Alaska. The majority of the people going to Alaska, he states, are Americans and Western Canadians, most of them tourists. Canadians from the east did not seem to have the time, even when they were west, to go to Alaska, though it was well worth while.

Along the coast line, valuable fishing industries are being operated, the majority of the fishermen being Japanese. There did not appear to be many trade possibilities outside of fishing and mining. The copper mines in Alaska are fast being developed.

Mr. Briggs visited the western branches of his company at Victoria, Vancouver, Calgary, Edmonton, Saskatoon, Regina and Winnipeg, and toured the country in the vicinity of the branches to get a grasp of the opportunities for business in their particular lines. As a result of his visit he was quite enthusiastic about their Western Canada organization and the prospects for still bigger business.

New Incorporations

Information about various new and old enterprises, the incorporation of which has been announced in recent issues of the Canadian and Provincial Gazettes.

Constant endeavors are being made to solve or simplify the farm labor problem in Western Canada. The Bell Automatic Shocker, Limited, a \$1,000,000 company, with head offices in Winnipeg, will apparently make a strong attempt.

On various occasions we have had to tell the story of still another branch of an American house locating in Canada. These are all very welcome, but we have still greater pleasure in announcing the incorporation of a Canadian branch of a well-known British house. We refer to Brunner Mond Canada, Limited, Toronto, who have recently taken out a charter authorizing the use of \$3,000,000 capital in the alkali business.

The constant urging of mining engineers, Government authorities and others to develop our natural resources, seems to have taken further effect as evidenced by the incorporation of Canadian Molybdenite, Limited, head office, Toronto, capital \$100,000. Their charter empowers them to quarry, smelt and refine molybdenite and other ores and metals.

The Cannon Canadian Co., Limited, Toronto, has been incorporated to look after the associated businesses of the Cannon Company, an English concern; the Paste and Gum Company, Limited, and the manufacturing business of Robert Ellis. As signified by one of the names, the products are glues, gelatines, pastes, etc.

A progressive Montreal firm has just taken out letters of incorporation authorizing them to use \$50,000 in their business to manufacture shirt waists, dresses, etc. We understand that the D'Alliard Mfg. Company, Limited, intend to operate stores in Montreal, Ottawa, Toronto, and other big centres.

Another addition to the rubber and associated industries is to be recorded in the announcement that the Dodge Metal Hose Company of Canada, Limited, Toronto, intend to manufacture rubber, metal or other hose connections and couplings for cars, engines, etc. The capital of this company is \$150,000.

A recent incorporation indicates the resurrection of the old Dominion Soap Company, under the same name, with a capital of \$50,000. We shall watch with interest the steps taken to make a success of this new venture.

Strengthening what has been said of Dominion Crucible Company comes the announcement of the incorporation of Graphite Products, Limited, Montreal, with a capitalization of \$500,000. Their charter gives them large powers, including the mining and milling, transporting, selling and dealing in graphite, iron, stone, asbestos and other products.

The A. L. Johnson Shoe Co., Limited, of Montreal, has just been formed with a capitalization of \$200,000. As indicated by the title this company will manufacture and deal in boots, shoes and everything pertaining to footwear. At the time of writing we have not ascertained whether the A. L. Johnson is he of the ilk of the Ames-Holden-McCready Company.

The Manville Asbestos Company, of Montreal, have just taken out letters of incorporation authorizing the use of \$1,000,000 capital. From the powers given to this company it would seem that they are going to step into the breach and put out further manufactured asbestos products.



TRANSPORTATION



By J. E. WALSH

CAPACITY LOADING

The scarcity of railroad equipment has now reached a point where it is necessary to load every available car to capacity if we are to maintain proper service to our customers.

NOTICE :

All cars under capacity load will be subject to delay.

IF YOU WANT PROMPT SERVICE SEND DIRECTIONS FOR FULL CAPACITY LOAD

WASHBURN-CROSBY COMPANY

Minneapolis, Minn.

THE CAR SHORTAGE.

Capacity Loading is Strongly Urged by Big American Manufacturers.

That the United States is in for the greatest car shortage in the history of the country, is the opinion of the traffic experts. The shortage will become acute in the early months of the year. It may or may not ease up after February. In the meantime, capacity loading is being strongly urged both by the railroad companies and large shippers. By capacity loading some relief will be obtained, which may make all the difference between sufficiency and a famine.

As an example of what one firm is doing to improve the situation, the missionary work of the Washburn-Crosby Co., of Minneapolis, deserves commendation. Among other things, this company has sent out a couple of cards, which are reproduced by way of example herewith. The smaller one is postcard size, the latter somewhat larger. Both hit the nail squarely on the head and, if the advice they proffer is followed out, good results should ensue.

HEATED CAR SERVICE.

New Heated Car Service Established in Eastern Canada, and between Eastern and Western Canada.

The Board of Railway Commissioners by General Order No. 173, have allowed the publication of certain tariffs covering charges for Heated Car Service.

The carriers, in January, 1916, submitted to the Board tariffs applicable between points in Canada, Fort William and East, also from the above mentioned territory to points west thereof, naming charges for Heated Refrigerator Car Service.

The Board of Railway Commissioners, by Order No. 24680, on January 27th, 1916, suspended these tariffs pending a hearing to take place at Ottawa, on February 8th, 1916.

General Order No. 173 is the result of the information supplied to the Board at the above mentioned hearing, which Order modifies the tariffs postponed by Order No. 24680.

The tariff between points in Canada, Westfort, Fort William and East thereof, have been modified by striking out the clause which provided five openings of the car door as a maximum, original shipping point to final destination, and by requiring that the clause providing for the loading of the shipments in station order be amended to apply to shipments loaded through carrier's warehouse as well as those loaded by shipper direct.

The charge for the Heated Refrigerator Car Service on carload shipments will be one cent per car per mile, minimum \$2.00 per car.

General Order No. 152, which allowed certain charges ranging from \$3.00 to \$10.00 per car per trip, based on mileage for carload shipments of vegetables loaded in refrigerator cars, is rescinded.

The proposed charges shown in the tariffs applicable between points East of Fort William and points West thereof, are reduced by Order No. 173, and certain of the territory in the West has been regrouped.

For example:—

The charge per car from Montreal to Winnipeg, as proposed, was \$14.00.

The Order makes this \$11.00.

The charge per car from Montreal to Vancouver, as proposed, was \$29.00.

The Order makes this \$25.00.

CAPACITY LOADING

Railroad Cars are very scarce.

Impossible to run our mills unless we load all available cars to capacity.

Orders for less than capacity load will be subject to DELAY.

YOU ARE RESPONSIBLE. Shipping order originates with you.

Make up full capacity cars in one of the following ways :

1. **Get customer to increase his order.**
2. **Get two customers to ship together.**
3. **Sell enough flour to make up the balance.**
4. **Sell enough feed to make up the balance.**
5. **Include shipment to less than carlot buyer, and**
6. **Last Resort—fill balance of car with stock order.**

IF YOU WANT PROMPT SERVICE FOR YOUR CUSTOMERS, SEND DIRECTIONS FOR FULL CAPACITY LOAD

Yours very truly,

WASHBURN-CROSBY CO.

INSURANCE

FIRE LOSSES FOR OCTOBER.

An Increase Over the Previous Month, but Decrease Over October, 1915.

According to estimates compiled by the *Monetary Times*, the fire loss throughout Canada during the month of October amounted to \$1,078,815, as compared with September losses amounting to \$981,703 and \$1,290,325 for October, 1915. This brings the total for the ten months of the year to \$14,158,429, as compared with \$10,987,292 during the corresponding period of 1915.

PERTINENT QUESTIONS.

How Would Canadian Municipalities Answer the Following Queries?

The following paragraph occurs in a pamphlet issued by the National Fire Protection Association, entitled "Topics for Fire Prevention Meetings and Suggestions for their Arrangement":

"Have you a fire prevention commission or is fire prevention a function of the fire department? Are regular inspections made by uniformed firemen? Is the fire chief under civil service? Is the department free from undesirable political influences? Has the fire chief authority to compel cleanliness and good housekeeping? How does he proceed where his orders are ignored? Has he authority to compel owners to eliminate conspicuous fire hazards and to render old buildings safe for occupancy? Do the firemen receive any scientific training? Has the fire chief proper authority over the sale, storage, transportation and use of inflammable oils and explosives."

It would be interesting to have these questions addressed to every municipality in Canada, and to note the replies.

ONTARIO INSURANCE COMMISSION.

Slow Progress Being Made with the Commission's Investigation.

The probability is that a good many months will elapse before the investigation of insurance conditions is brought to a close. The sessions of the Commission have, up to the present, been mainly taken up with the hearing of opinions of persons directly interested in the business of insurance. The scope of the investigation is a very wide one and the results of the inquiry will undoubtedly lead to legislation. Little or no concrete evidence of unsatisfactory conditions has so far been brought forward, but such evidence may appear in the future. The general body of Premium Payers, who are, of course, the people most directly interested in the inquiry, do not yet appear to realize that the Commission was appointed for their benefit and that if certain phases of the insurance business in Ontario are carried on against the public interest it is not only their privilege but their duty to assist the Commissioner in his work by coming forward with facts or suggestions. It is only by such means that the Commission can attain the purpose for which it was appointed. As stated before, every class of insurance, with the exception of life and marine, is included in the investigation.

The Canadian Fire Underwriters' Association is facing somewhat serious charges (which have not as yet been

definitely proved) of discrimination and unfairness in their dealings with the insuring public. The Underwriters may, or may not, fear that these charges may be proved, but they have chosen to draw the proverbial herring across the trail by complaining that they have to meet unfair competition from companies not licensed in the Province and requesting that a substantial tax be imposed on all premiums paid to unlicensed companies. In other words, these gentlemen make the modest demand that they be granted a virtual monopoly of the fire insurance business in Ontario. The competition of licensed non-tariff companies is so small as to be almost negligible. Even including the operations of unlicensed companies, hampered as they already are by existing legislation, there is scarcely sufficient competition to exercise a wholesome restraint on the Canadian Fire Underwriters' Association. It is easy to imagine the result of a tax which would nullify the value of this competition.

SOME GOOD ADVICE.

Means Devised to Extinguish Fires of Inflammable Liquids in Great Britain.

The British Fire Prevention Committee have recently carried out a series of tests, the results of which tend to prove that sawdust intimately mixed with bicarbonate of soda and applied in bulk has certain advantages over sand and similar materials as an extinguishing medium for comparatively small fires occasioned by the ignition of the vapour of gasoline and other inflammable liquids.

When sawdust is applied to the surface of a liquid it will float for some time, thus excluding the oxygen of the air and smothering the fire. Ordinary sawdust, as obtained from saw-mills, is the most suitable for this purpose. It must be free from shavings and chips of wood, but it does not require to be either specially dried or to contain added moisture.

The addition of bicarbonate of soda, although not essential, is advantageous. Under the action of the heat from the burning liquid, carbonic acid gas is given off from the bicarbonate of soda adhering to the floating sawdust and accordingly close to the source of the fire. The gas given off under such circumstances slightly assists in extinguishing the fire.

The Committee have found an effective proportion of bicarbonate of soda to sawdust to be 10 pounds to 1 bushel (or say 12 pounds) of sawdust.

Any form of bin, such as a dust-bin or corn-bin, can be used, but a specially suitable bin for the mixture can be made of sheet iron, having a base 24 inches square, sides 3 feet 6 inches high, top 18 inches square, so that the sides slope slightly. The top should be arranged for filling purposes and at the bottom of one side there should be provided a hinged door 16 inches wide and 21 inches deep, held up by buttons, the hinges being at the bottom; on unfastening the door it should fall on the floor, forming a convenient opening for easily shovelling out the mixture. Such a bin would hold about eight bushels, and it should be kept in a convenient and easily accessible position as near the petroleum spirit, etc., as possible.

Any form of shovel or scoop can be used. Preferably it should have a long handle with a large scoop—about 4 feet long, with a scoop 11 inches wide and 15 inches long. In order that the shovel should always be handy, it is suggested that suitable provision should be made for holding it on the bin.

The mixture to be thoroughly effective should be applied

not only in bulk but rapidly and systematically, the object being to produce what may be termed a lateral "curtain" or scythe effect.

The Committee wish to emphasize the fact that so far their investigations have been limited to small quantities of inflammable liquids not exceeding two gallons, and the area over which they spread did not exceed six feet square. These con-

ditions are met with in motor garages and hangars, for which, in the opinion of the Committee, the proposed mixture is applicable and economical.

The Committee take the opportunity of indicating that their tests showed that the application of this mixture or any similar mixture in small quantities from tubes or canisters does not give satisfactory results.

UNITED STATES FIRMS NAMED IN THE BRITISH STATUTORY BLACK LIST

Extracts from the London "Gazette"

FOR the guidance of Canadian manufacturers, INDUSTRIAL CANADA publishes herewith the list of United States firms appearing in the British Statutory Black List. While, according to the ruling of the Department of Justice, the list does not legally apply to Canada but only to the United Kingdom, it is doubtless the desire of Canadians that it should be made practically as effective here as in the old country.

The list was first published in the *London Gazette* of July 18, 1916. Subsequent orders in council, making additions and corrections, were published in the *Gazette* of August 8 and 22, and September 8. It is from the *Gazette* that the following names have been extracted:—

British Statutory Black List of United States Firms.

Bauer, Phillip, & Co., 68 Broad St., New York. Dealing in Metals. 27.1.16. S.L. 18.7.16.
 Beer, Sondheim, & Co., New York. 18.7.16.
 Blumenthal, Simon, R. (of Zimmerman & Forshay, 9 Wall St., New York). 18.7.16.
 Botzow, Herman (of O. C. Kanzow & Co., 11 Broadway, New York). 18.7.16.
 Brasch & Rothenstein, Inc., 32 Broadway, New York, Copper and Brass. 17.2.11. S.L. 18.7.16.
 Bunge, Mauricio (of Maclaren & Gentles, Inc., 222 Produce Exchange, New York). 18.7.16.
 Burin, Alf. (of Brash & Rothenstein, Inc., 32 Broadway, New York). 18.7.16.
 Carlowitz & Co., 82 Beaver St. and 35 West Houston St., New York. 18.7.16.
 Cullen, Chas., Ocala, Florida. 18.7.16.
 Czoch, Armin (of International Import & Export Company, 52 Frankfort St., New York). 18.7.16.
 Dietzgen, Eugene Co., 166 W. Monroe St., Chicago; and 218 East 23rd St., New York. 18.7.16.
 Electro Bleaching Gas Co., Buffalo Avenue and Union St., Niagara Falls, and 25 Madison Avenue, New York. 18.7.16.
 Erlanger, E. H., 60 Wall Street, New York. 18.7.16.
 Falk, Carlos (of Maclaren & Gentles, Inc., 222 Produce Exchange). 18.7.16.
 Goldschmidt Chemical Co., 60 Wall Street, New York. 18.7.16.
 Goldschmidt Detinning Co., 60 Wall Street, New York. 18.7.16.
 Goldschmidt Thermit Co., 90 West Street, New York. 18.7.16.
 Gravenhorst & Co., 96 Wall Street, New York. 18.7.16.
 Grubnau, Carl & Son, 144 Arch Street, Philadelphia; also at 74 Wall Street, New York; and Boston. 22.5.16. S.L. 18.7.16.
 Gubelman, Oscar L. (of Knauth, Nachod & Kuhne, 15 William Street, New York). 18.7.16.
 Hardy, Chas. (Alias Seligman), 50 Church St., New York. Metals. 27.1.16. S.L. 18.7.16.
 Hasenclever, Joh. Bernhard, & Soehne, 21 State Street, New York. 18.7.16.
 Hasenclever & Co., 24 State Street, New York. 18.7.16.
 Hauser, Morgan H. (of Zimmerman & Forshay, 9 Wall St., New York). 18.7.16.
 Hirsch, Alfredo (of Maclaren & Gentles, Inc., 222 Produce Exchange, New York). 18.7.16.
 Hirschland, Franz H. (of Goldschmidt Thermit Co., 90 West Street, New York). 18.7.16.
 Howe, Robert W. (of Brash & Rothenstein, Inc., 32 Broadway, New York). 18.7.16.
 Humburg, Wm. E., 25 Beaver Street, New York. 18.7.16.
 International Hide & Skin Co., 59 Frankfort Street, New York. 27.1.16. S.L. 18.7.16.
 International Import & Export Co., 136 South Fourth Street, Philadelphia, Pa. 18.7.16.
 Isaacs, J. (of John Simon & Bros. Cotton Exchange Bldg., 15 William Street, New York). 18.7.16.
 Jaffe, Max, 15 William Street, New York. 18.7.16.
 Kahl, J. A., 82 Beaver Street, New York. 18.7.16.
 Kanzow, Otto Co. (of O. C. Kanzow & Co., 11 Broadway, New York). 18.7.16.
 Kanzow, O. C. & Co., 11 Broadway, New York. Coffee. 27.1.16. S.L. 18.7.16.
 Kempner, H., Cotton Exchange, Galveston, Texas. Cotton. 27.1.16. S.L. 18.7.16.

Knauth, Mary I. (of Knauth, Nachod & Kuhne, 15 William Street, New York). 18.7.16.
 Knauth, Nachod & Kuhne, 15 William Street, New York. German-American Bankers. 20.1.16. S.L. 18.7.16.
 Knauth, Wilhelm (of Knauth, Nachod & Kuhne, 15 William Street, New York). 18.7.16.
 Maclaren & Gentles, Inc., 222 Produce Exchange, New York. 2.5.16. S.L. 18.7.16.
 McNear, Geo. W., Inc., Insurance Exchange Bldg., 433 California Street, San Francisco, California. 18.7.16.
 Magenheimer, A., 68 Broad Street, New York. 18.7.16.
 Maier, Marx, 200 Fifth Avenue, New York. Paper Maker. 17.2.16. S.L. 18.7.16.
 Merchants' Colonial Corporation, 45 William Street, New York 5.6.16. S.L. 18.7.16.
 Muller, Carl (of Muller, Schall & Co., 45 William Street, New York). 18.7.16.
 Muller, Ernest (of Schuchardt & Schutte, 90 West Street, New York). 18.7.16.
 Muller, Schall & Co., 45 William Street, New York, Bankers. 2.12.15. S.L. 18.7.16.
 Muller-Schall, Frederick (of Muller, Schall & Co., 45 William Street, New York). 18.7.16.
 Nachod, Maris, 15 William Street, New York. 18.7.16.
 National Zinc Co., 2 Stone Street, New York. 18.7.16.
 Neuhaus, Richard (of the Electro Bleaching Gas Co., Buffalo Avenue and Union Street, Niagara Falls, and 25 Madison Avenue, New York). 18.7.16.
 Neumond, K. & E., 25 Broad Street, New York. Grain, Oil-cake. 16.12.15. S.L. 18.7.16.
 Newton, Rollin C., 15 William Street, New York. 18.7.16.
 Norfolk Refining & Smelting Co., Virginia. 18.7.16.
 Ornstein & Koppel, Pennsylvania. 18.7.16.
 Pavenstedt, Edmund (of Muller, Schall & Co., 45 William Street, New York). 18.7.16.
 Perutz, Leopold, 17 Battery Place, New York. 18.7.16.
 Petroleum Products Co., of California, Inc., San Francisco, California. 18.7.16.
 Rees, Louis J. (of Zimmerman & Forshay, 9 Wall Street, New York). 18.7.16.
 Reuter Broeckelman & Co., 59 Pearl St., New York. 18.7.16.
 Richter, Alfred (of Reuter Broeckelman & Co., 59 Pearl Street, New York). 18.7.16.
 Roessler & Hasslacher Chemical Co., 100 William Street, and 14 Jay Street, New York. 18.7.16.
 Rubber & Guayule Agency, Inc., 108 Water St., New York. 18.7.16.
 Rushmore, Townsend, 82 Beaver Street, New York. 18.7.16.
 Schall, William, Junior (of Muller, Schall & Co., 45 William Street, New York). 18.7.16.
 Schenker & Co., 17 Battery Place, New York, Forwarding Agents. 29.2.16. S.L. 18.7.16.
 Schloetborg, G. F., 318 Globe Bldgs., Seattle, Wash. 18.7.16.
 Schmidt, Paul (of Rubber & Guayule Agency, Inc., 108 Water Street, New York). 18.7.16.
 Schuchardt & Schutte, 90 West Street, New York. 18.7.16.
 Schutte, Bunemann & Co., 15 William Street, New York, Coffee and Cocoa Importers. 21.12.15. S.L. 18.7.16.
 Scully, John S. (of Zimmerman & Forshay, 9 Wall Street, New York). 18.7.16.
 Siemssen & Co., 82 Beaver Street, New York. 18.7.16.
 Simon, John & Brothers, Cotton Exchange Bldgs., 15 William Street, New York. 21.3.16. S.L. 18.7.16.
 Sonneborn, L., Sons, Inc., 262 Pearl Street, and 206 Water Street, New York. 18.7.16.
 Southern Products Trading Company (controlled by John Simon), Cotton Exchange Bldg., 15 William Street, New York. 18.12.15. S.L. 18.7.16.
 Stegemann, Edward, Jr. (of Brasch & Rothenstein, Inc., 32 Broadway, New York). 18.7.16.
 Superior Export Co., Inc., 90 West Street, New York. 27.1.16. S.L. 18.7.16.
 Texas Export & Import Co., Galveston, Cotton Seed Products. 27.1.16. S.L. 18.7.16.
 Ulrich, Ernst, 15 William Street, New York. 18.7.16.
 Weber, Edward (of Rubber & Guayule Agency, Inc., 108 Water Street, New York). 18.7.16.
 Wehrenberg, Otto (of Phillip Bauer & Co., 68 Broad Street, New York). 27.1.16. S.L. 18.7.16.
 Weingardt, Arend H., 15 William St. and 120 Broadway, New York. 18.7.16.
 Zimmerman & Forshay, 9 Wall Street, New York. 18.7.16.
 Zimmerman, Leopold (of Zimmerman & Forshay, 9 Wall Street, New York). 18.7.16.

T A R I F F

By J. R. K. BRISTOL

TO MANUFACTURERS WHO CONTEMPLATE ENGAGING IN EXPORT BUSINESS

Are you aware that you have the privilege of practically duty free materials for manufacturing for export? Full information on this matter can be obtained from the Customs Department, Ottawa; or from the Manager, The Tariff Department, Canadian Manufacturers Association, Toronto

CUSTOMS DEPARTMENTAL RULINGS.

Recent Decisions Governing Duty on Various Imported Articles.

Copper and Bronze Wire, plain, tinned or plated, dutiable under Item 351.

Hat Plaits, per samples, ruled free under Item 641.

Slasher Cells for Textile Machinery, dutiable under Item 468.

Muskegon Hemlock Wood Tanning Extract, free under Item 203.

Soluble Prussian Blue, dutiable under item 246.

Argo Nupak Prunes, put up in hermetically sealed cans, found to be dried prunes and dutiable under Item 99.

Success harrow cart and other similar harrow carts, intended and obviously for use only as parts of harrows, rated for duty under tariff item 446.

Binder truck wheels, consisting of wheels to which are attached short bent axles and which are unsuitable except as truck wheels for harvesters, rated for duty under tariff item 445.

Pepsin, produced from pig's stomach, rated for duty under tariff item 711.

Drums or cylinders containing liquid chlorine and gases paying an ad valorem duty, considered usual coverings and dutiable under tariff item 710 (b).

Board of Customs Decisions.

Book entitled "Types and Breeds of Farm Animals," by C. S. Plum, Professor of Animal Husbandry in the College of Agriculture of the Ohio State University, per sample submitted, declared to be entitled to entry under tariff item 172.

Dried peaches, in air-tight tins, declared to be dutiable under tariff item 93.

A CONCESSION.

French Prohibition of Imports Amended to Favor British Products.

Referring to the notice relative to the above, which appears on page 866 of the November issue of INDUSTRIAL CANADA, a further notification has been issued by the Imperial Government, to which the Department of Trade and Commerce directs attention, viz.:

That it will be necessary in future that applications for licenses to ship British goods into France that are on the French prohibited imports lists should specify the value of the goods (in English currency) and the net, as well as the gross, weight of the consignment. These weights should be expressed in both English units and in kilogrammes.

CERTIFICATES OF ORIGIN AND INTEREST.

Canadian Government Obtains Ruling From Imperial Government on Point of Importance.

The above certificates are required in connection with all goods imported into Canada from neutral countries in Europe. The form of this certificate, prescribed by Order in Council, will be found on pages 752 and 867 of prior issues of INDUSTRIAL CANADA. In connection with these certificates members of the Canadian Manufacturers Association found themselves subject to delay and expense where goods were trans-shipped in the United Kingdom through this certificate being detached and retained by the authorities there. The Government at Ottawa has taken this matter up by cable with the Imperial Government, and obtained the following ruling:

"Certificates of Origin and Interest for shipments to Canada will not be retained in the United Kingdom, except in the case of goods imported into the United Kingdom and subsequently re-exported."

If the goods are imported into the United Kingdom and subsequently re-exported no certificate of origin and interest would be required by the Canadian Customs.

SPAIN REMOVES RESTRICTIONS.

Government Purchases Not Restricted to National Products.

Because of "poor quality and imperfection of the national production," a royal decree of September 27th removes the restrictions on foreign bids for Government purchases of the following articles:

Gas motors of more than 30 horsepower.

Gas generators for gas motors of more than 50 horsepower per unit.

Electric dynamos of all classes, from 50 horsepower.

Electric motors of all classes, from 50 horsepower, normal load.

Transformers of all classes of more than 200 kilowatts potential, normal load, or working tension above 10,000 volts.

Malleable steel or wrought iron of all classes and weights, whether or not galvanized.

Rails weighing over 20 kilos per linear meter (13.44 pounds per foot).

Malleable sheet steel of all dimensions and weights, whether galvanized or not.

In this consulate's cablegram "aceros dulces ó hierros perfilados" was transmitted, after consultation with a local dealer in iron and steel, as "soft steel and iron forms," but it is believed the term "malleable steel and wrought iron" used above is more satisfactory.—Commerce Reports, No. 266, Nov. 11, 1916.

MOTION PICTURE FILMS.

Customs Charges Reduced by Varying Style of Packings.

The American Consul-General at Rio de Janeiro, Brazil, has called attention to a saving on customs duties now being made by some American film companies sending films to Brazil through a change in the type of packing used, a heavy oiled or tarred paper being substituted for the tin case ordinarily employed as the immediate container for American films.

A similar saving could be made on the duties on films imported into Chile. The duty on developed cinematograph films is 6 pesos gold per kilo "legal" (inclusive of wrappings or of weight of immediate container), equal to \$0.993 United States currency per pound. As the tin container for a film will weigh approximately a pound, the saving on duty by substituting for it a wrapping of heavy oiled or tarred paper would be approximately \$1 for each film. There would be no objection to having the box or case in which a number of films are shipped lead or zinc-lined, and no additional duties would be incurred, provided the lead or zinc lining were fastened to the outer box or case in such a manner as to make it part of that case.

The duty on posters and advertising matter in general is 1 peso gold per kilo gross weight, equal to \$0.165 United States currency per pound. It is improbable that in a country presenting so small a market for films as Chile posters and advertising matter could be printed locally with any appreciable economy.

A COMMERCIAL REGISTER.

Detailed Information About All Merchants to be Kept by France.

The French Minister of Commerce has prepared a bill, soon to be presented to the National Legislature, establishing a Commercial Register, similar to those which for some years have been in existence in several European countries, particularly Scandinavia.

According to the bill, this register will constitute a sort of official reference list of French and foreign merchants established in France. It will contain detailed information concerning their citizenship and nationality, their personal and conjugal status, and their commercial record and affiliations. In the case of corporations the register will indicate the name of the company, the names of its officials, and the location of the principal office in France or abroad, as well as information concerning branch offices or agencies in France or elsewhere.

This official record of mercantile concerns will be in charge of the Tribunal de Commerce, where it will be kept up-to-date and be at the disposal of the public. Persons seeking information regarding firms with which they may have, or with which they may seek, business relations may thus be rapidly and accurately informed concerning their status.—Commerce Reports, No. 281, Nov. 29, 1916.

SHIPBUILDING CONCESSIONS.

Drawback of Customs Duty on Vessels Built in Canada on and after 1st November, 1916.

New regulations made and established in the above matter by Order in Council dated 21st October, 1916.

These regulations provide that imported materials may be entered as for warehouse by the builder in yards or buildings approved by the Minister of Customs, and may be ex-warehoused temporarily for the construction of the vessel, subject to deposit of one per cent. of the duty.

The regulations are as follows:

His Excellency the Administrator in Council is pleased to make the following Regulations for granting a drawback of Customs duty on articles used in the original construction of vessels built in Canada on and after 1st November, 1916, and the same are hereby made and established accordingly,—

(1) A drawback, not exceeding ninety-nine per cent. of the Customs duty paid, may be granted and paid by the Minister of Customs on materials used in the original construction of ships and vessels measuring over five hundred tons gross tonnage, built in Canada, when such ships or vessels are authorized by Order in Council to be exported for registry outside of Canada or are British Registered in

Canada and are constructed so as to obtain a class in Lloyds, Bureau Veritas, British Corporation, or other recognized classification satisfactory to the Minister of Customs:

Provided that the drawback payable under this Section shall be in lieu of any drawback based on a specific rate per registered ton.

(2) The claimant for drawback must be the builder of the ship or vessel. Drawback shall be paid only on ships or vessels which have within themselves the power of independent navigation, either by means of sails, steam or other motive power.

(3) The payment of the drawback shall be subject to the following conditions, viz:—

(a) The quantity of materials used and the amount of duty paid thereon shall be ascertained.

(b) The Claimant for drawback shall be required to make a declaration in the terms set forth in Schedule "A" hereto.

(c) There shall be furnished by the Claimant, a Certificate from the Registrar of Shipping in the terms set forth in Schedule "B" hereto.

(d) The claim for drawback shall be verified under oath, before a Collector of Customs or Justice of the Peace, to the satisfaction of the Minister of Customs, in such form as he shall prescribe. The Minister of Customs may also require in any case the production of such further evidence, in addition to the usual averments, as he deems necessary to establish the bona fides of the claim.

(e) All applications for payment of drawback shall be placed before the Customs Department with evidence as above mentioned complete, within a period of six months from the date of registration or launching of the ship or vessel upon which the claim is made; otherwise the same shall be rejected.

SCHEDULE "A."

I, of do hereby declare that I am the builder of, and claimant for drawback on materials used in the construction of a called the built at in the Dominion of Canada (1) and launched on the day of 19.... as per certificate attached.

I further declare that the said is an entirely new vessel, built with knees and classed for years as per classification Certificate of bearing date

Declared before me
this day of 19..

Builder.

Collector of Customs.

SCHEDULE "B."

I, the undersigned Registrar of Shipping at do hereby certify that the above-named vessel is entirely new, built during the season of by at as above stated, and launched on the day of that the tonnage thereof is tons gross, and that the said vessel is built with knees, and that the registered owners are

(1) I further certify to having examined the Certificates of classification, and find that the said vessel is classed at for years, and that the said vessel has within itself the power of independent navigation. Port

Registrar of Shipping.

(Sgd.) RODOLPHE BOUDREAU,
Clerk of the Privy Council.

(1) State Names if registered in Canada—otherwise insert the words, "Not registered in Canada."

FOREIGN TRADE OF CANADA.

Comparison, 1914, 1915, 1916.

IMPORTATIONS.

	Month of October.			Seven Months Ending October.		
	1914.	1915.	1916.	1914.	1915.	1916.
Dutiable goods	\$21,061,440	\$22,801,957	\$37,946,311	\$179,645,822	\$147,157,521	\$254,531,118
Free goods	14,052,290	16,713,187	33,250,241	107,155,995	105,950,142	207,630,677
Coin and bullion	52,578,669	1,924,605	781,115	81,228,410	5,766,782	20,971,433
Duty collected	5,657,871	8,201,830	12,074,463	48,514,957	52,622,863	82,177,318

EXPORTATIONS.

(For October.)

	1914.		1915.		1916.	
	Domestic.	Foreign.	Domestic.	Foreign.	Domestic.	Foreign.
Products of the Mine.....	\$5,104,440	\$32,345	\$6,669,776	\$231,707	\$7,299,082	\$17,383
Products of the Fisheries.....	2,166,972	13,014	2,527,616	17,421	2,515,518	17,787
Products of the Forest.....	4,935,715	154,051	5,503,343	52,066	5,450,202	338
Animals and their Produce.....	8,537,247	569,918	12,081,545	136,064	13,718,592	530,845
Agriculture	17,953,959	4,011,521	39,833,353	2,561,038	27,306,934	654,333
Manufactures	7,131,445	754,326	12,880,731	890,770	28,637,814	651,726
Miscellaneous	53,644	117,634	542,218	174,417	384,033	131,147
	\$45,883,422	\$5,652,809	\$80,038,582	\$4,063,483	\$85,312,175	\$2,003,559
Coin and bullion		308,328		24,462,311	14,635	5,022,443
Total	\$45,883,422	\$5,961,137	\$80,038,582	\$28,525,794	\$85,326,810	\$7,026,002

EXPORTATIONS.

(Seven Months Ending October.)

	1914.		1915.		1916.	
	Domestic.	Foreign.	Domestic.	Foreign.	Domestic.	Foreign.
Products of the Mine.....	\$31,513,810	\$157,176	\$36,766,306	\$7,034,710	\$48,242,497	\$141,181
Products of the Fisheries.....	9,924,715	77,983	11,960,689	44,605	12,845,386	30,104
Products of the Forest.....	28,917,329	354,103	34,075,344	353,280	36,703,753	202,612
Animals and their Produce.....	41,664,443	1,151,421	57,015,375	1,775,246	67,101,478	2,253,289
Agriculture	75,473,226	32,575,109	99,180,336	17,010,321	233,448,260	3,871,858
Manufactures	39,048,724	4,490,481	84,357,550	3,956,293	219,461,054	4,875,953
Miscellaneous	215,074	2,809,988	3,075,130	873,962	4,231,261	909,711
	\$226,757,321	\$41,616,261	\$326,430,730	\$31,048,417	\$622,033,689	\$12,284,708
Coin and bullion.....	266	3,767,482	75	93,183,821	15,792	195,722,474
Total	\$226,757,587	\$45,383,743	\$326,430,805	\$124,232,238	\$622,049,481	\$208,007,182

TRADE ENQUIRIES

These enquiries come into our hands from various sources. The Weekly Bulletin of the Department of Trade and Commerce, from which the enquiries indicated in the sub-heading allotted to them are taken, should be read regularly by those interested in foreign trade. It will be sent free on application to the Department at Ottawa. The names connected with all those enquiries can be furnished direct from the Commercial Intelligence Department, Canadian Manufacturers Association, Toronto.

DOMESTIC TRADE ENQUIRIES.

618. **Briar Pipes.**—We are in touch with a patentee of a pipe the feature of which is a cleaning device. Manufacturers who are interested in making this should communicate with this office.
619. **Rustic Furniture.**—A gentleman in the United States, who is interested in several summer camps in Canada, desires to obtain the names of several manufacturers of Rustic Furniture.
620. **Thick Earthenware Vats or Jars.**—A western engraving company would like to communicate with firms manufacturing these articles.
621. **Tinning Steel and Iron Bars.**—A manufacturing firm in Northern Ontario would like to know what firms are equipped to do tinning on standard lengths of steel and iron bars.

622. **Talc.**—In connection with the opening of a new deposit of Talc in Northwestern Ontario, the parties interested would like to hear from manufacturers using Talc in a solid form.

IMPORT TRADE ENQUIRIES.

623. **Wool, Hides and Bristles.**—A well-recommended firm in Uruguay offers to export to Canada the above materials. They claim to be specially qualified to handle this business satisfactorily.

EXPORT TRADE ENQUIRIES.

624. **Hammer and Pick Handles.**—A manufacturers' agent, whose head office is Johannesburg, is at present in Canada and desires to arrange with Canadian manufacturers for representation in South Africa.
625. **Railway Material, Iron and Steel, and Hardware.**—A manufacturers' agent, whose head office is Johannesburg, is at present in Canada and desires to arrange with Canadian manufacturers for representation in South Africa.
626. **Brewers' Supplies.**—A manufacturers' agent, whose head office is Johannesburg, is at present in Canada, and desires to arrange with Canadian manufacturers for representation in South Africa.
627. **Underwear.**—A well-known New Zealand manufacturers' agent, who paid a visit here recently, would like to get in touch with Canadian manufacturers with a view to representing them in New Zealand.

CANADA



NATIONAL SERVICE

PUBLIC NOTICE is hereby given under the authority of the "War Measures Act, 1914," that during the first week in January, 1917, an inventory will be made by the Post Office Authorities, of every male between the ages of sixteen and sixty-five, residing in Canada.

National Service Cards and addressed envelopes for their return to Ottawa have been placed in the hands of all Postmasters for distribution amongst the persons required to fill in such cards. Every male person of the prescribed ages is required to fill in and return a card enclosed in an envelope within ten days of its receipt.

Any person who fails to receive a card and envelope may obtain the same upon application to the nearest Postmaster.

R. B. BENNETT,

Director General.

Ottawa, 15th December, 1916.

THE NATIONAL SERVICE CARD

1. What is your full name? <u>Graham</u>		2. How old are you? <u>20</u> years.	
3. Where do you live? Province <u>Ont.</u>		5. In what country were you born? <u>Can.</u>	
4. Name of city, town, village or Post Office } <u>St.</u>		6. In what country was your father born? <u>Canada</u>	
Street <u>McDonagh</u> Number <u>241-335</u>		7. In what country was your mother born? <u>Canada</u>	
10. How much time have you lost in last 12 months from sickness? <u>Nil</u>		8. Were you born a British subject? <u>Yes</u>	
11. Have you full use of your arms? <u>Yes</u>		9. If not, are you naturalized? <u>No</u>	
12. Of your legs? <u>Yes</u>		15. Which are you—married, single or a widower? <u>Single</u>	
13. Of your sight? <u>Yes</u>		16. How many persons besides yourself do you support? <u>None</u>	
14. Of your hearing? <u>Yes</u>			
17. What are you working at for a living? <u>Doing g.l.s.</u>			
18. Whom do you work for? <u>W.O.T.</u>			
19. Have you a trade or profession? <u>No</u> 20. If so, what? <u>No</u>			
21. Are you working now? <u>Yes</u> 22. If not, why? <u>No</u>			
23. Would you be willing to change your present work for other necessary work at the same pay during the war? <u>Yes</u>			
24. Are you willing, if your railway fare is paid, to leave where you now live, and go to some other place in Canada to do such work? <u>Yes</u>			

GOD SAVE THE KING

628. **Handles.**—A well-known New Zealand manufacturers' agent, who paid a visit here recently, would like to get in touch with Canadian manufacturers with a view to representing them in New Zealand.
629. **Enamelware.**—A well-known New Zealand manufacturers' agent, who paid a visit here recently, would like to get in touch with Canadian manufacturers with a view to representing them in New Zealand.
630. **Bedstead Tubing and Angles.**—A New York export house has specifications for a quantity of Bedstead Tubing and Angles for shipment to Australia.
631. **Steam Pipes and Fittings.**—A well-recommended agent in South Africa applies to us for assistance in getting the names of manufacturers who desire representation in South Africa.
632. **Agricultural Implements.**—A well-recommended agent in South Africa applies to us for assistance in getting the names of manufacturers who desire representation in South Africa.
633. **Kerosene Engines and Centrifugal Pumps.**—A well-recommended agent in South Africa applies to us for assistance in getting the names of manufacturers who desire representation in South Africa.
634. **Corundum.**—A cutlery manufacturing firm in the United States is desirous of obtaining quantities of pure Corundum.
635. **Imitation Parchment and Kraft Paper.**—An English paper agent has supplied us with samples, giving sizes and weights, etc., of different sorts of paper that he can find a market for. These will be supplied to manufacturers on application.
636. **Aluminum Ware.**—A manufacturers' agent in Sydney, who offers good references, would like to hear from Canadian manufacturers who desire representation in Australia.
637. **Fibre Board.**—A manufacturers' agent in Sydney, who offers good references, would like to hear from Canadian manufacturers who desire representation in Australia.
638. **Spades and Shovels.**—A manufacturers' agent in Sydney, who offers good references, would like to hear from Canadian manufacturers who desire representation in Australia.
639. **Tools.**—A manufacturers' agent in Sydney, who offers good references, would like to hear from Canadian manufacturers who desire representation in Australia.
640. **Builders' Hardware.**—A manufacturers' agent in Sydney, who offers good references, would like to hear from Canadian manufacturers who desire representation in Australia.
641. **Wood Alcohol.**—A firm of brokers in New Zealand, specializing in chemicals and kindred lines, and offering New Zealand references, would like to hear from Canadian manufacturers who desire to sell their goods in New Zealand.
642. **Chemicals.**—A firm of brokers in New Zealand, specializing in chemicals and kindred lines, and offering New Zealand references, would like to hear from Canadian manufacturers who desire to sell their goods in New Zealand.
643. **Matches.**—A firm of brokers in New Zealand, specializing in chemicals and kindred lines, and offering New Zealand references, would like to hear from Canadian manufacturers who desire to sell their goods in New Zealand.

644. **Agencies.**—A party offering to furnish references as to reputation and ability leaves for England shortly and desires while there to represent Canadian manufacturers of specialties who are not already represented there.

EXPORT TRADE ENQUIRIES TAKEN FROM THE WEEKLY BULLETIN OF THE DEPARTMENT OF TRADE AND COMMERCE.

645. **Handles.**—A South African firm of wholesale dealers requests samples and prices and particulars of delivery on hammer, pick, axe, rake, tool, broom and other handles.
646. **Chairs.**—A South African firm of wholesale dealers requests catalogues, price lists and full particulars of chairs, folding, bentwood and others.
647. **Paints, Oils and Varnish.**—A South African firm of wholesale merchants asks for colour lists, price lists, and, where possible, samples, from Canadian manufacturers of paints, oils and varnishes.

Condensed Advertising

FACTORY FOR SALE.

Factory building, specially built for wood-working; 20,000 sq. feet floor area; also $3\frac{3}{4}$ acres of land and railway siding; in Ontario town. For sale cheap. Address INDUSTRIAL CANADA, Box 2, Toronto.

FOR SALE.

An exceptional opportunity for acquiring a factory is offered by Boswell's Brewery in the large block of buildings, with railway siding, at Beauport, Que. Particulars are given in their advertisement, page 873, this issue of INDUSTRIAL CANADA. Apply to Boswell's Brewery, Quebec, P.Q.

PARTNER WANTED.

Well-established hosiery and knit goods mill seeks silent or working partners, men with knowledge of the business preferred. Good practical men with small capital not rejected. Apply to Box 93, INDUSTRIAL CANADA, Toronto.

IMPORTANT TO MANUFACTURERS.

If an established connection and intelligent representation in Western Canada interest you, write us. We specialize in "Made-in-Canada" goods and guarantee personal attention.

P. O. Box 2224, Winnipeg.

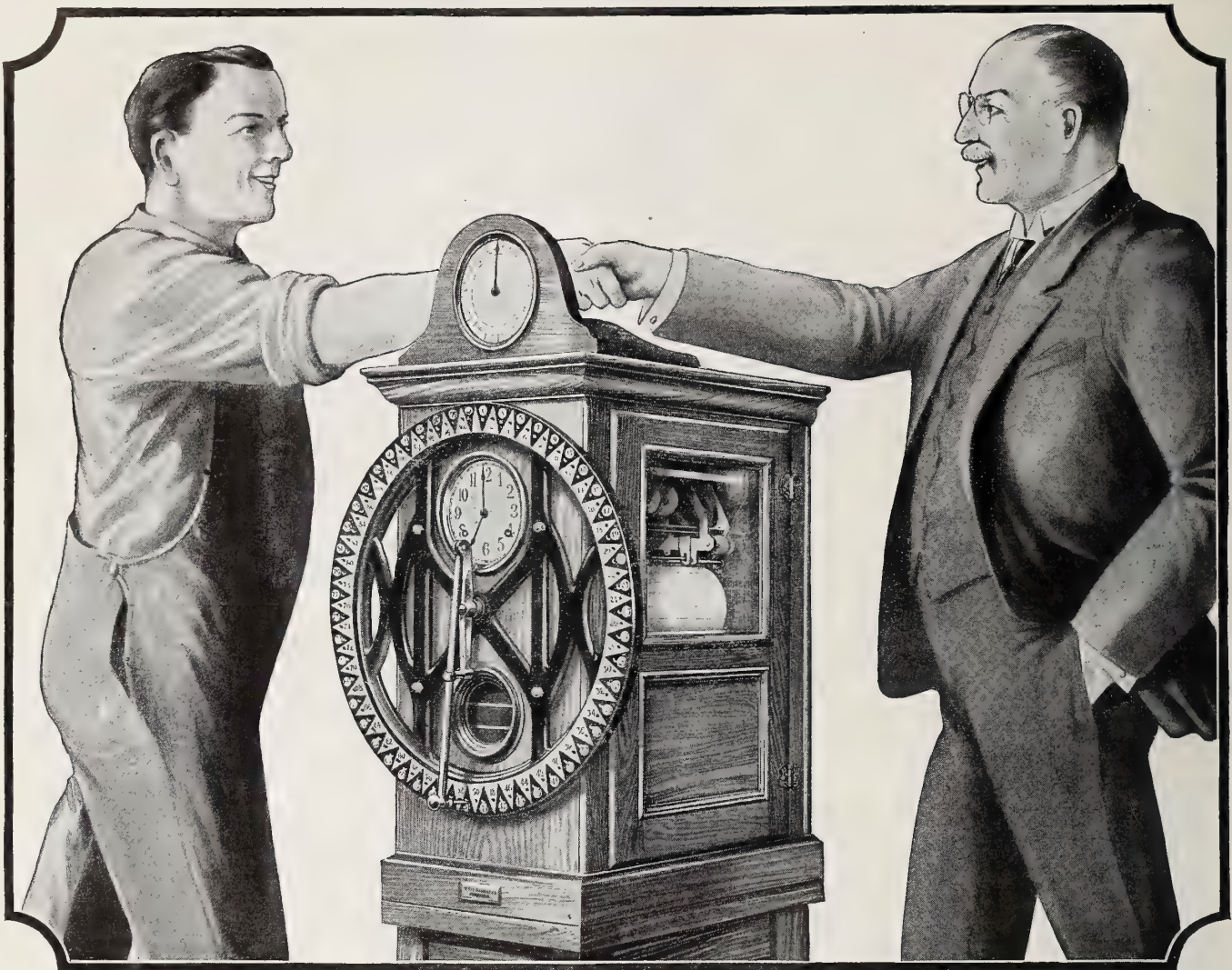
Stock on consignment
if necessary.

AGENCIES WANTED

The undersigned is open to represent one or two responsible manufacturers in the City of Hamilton on a commission basis. Has extensive acquaintance with the general manufacturing interests of the city, and can furnish excellent references.

Address, CHAS. A. MURTON,
34 King William St., Hamilton, Ont.

Former Secretary Hamilton Branch
Canadian Manufacturers' Association.



Peace and good will between Employer and Employee

You want it in your plant! It would be a great advantage when you are trying to get the utmost possible output—with a fluctuating, "independent" labor supply.

INTERNATIONAL TIME RECORDER

It's the great business peacemaker. It makes every worker his own time-keeper, and thus eliminates one of the greatest sources of ill-will and complaint: pay-time disputes.

Send for latest folders and price lists.



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F. E. Mutton, Gen. Mgr.

Winnipeg
400 Electric Ry. Bldg.

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817 Pender St. W.

Montreal:
Cartier Bldg.
Cor. McGill and Notre Dame Sts.

A friend—

To every honest, independent workingman who doesn't want to feel that he's got to curry favor with a time-keeper or "put up a holler" every now and then about mistakes in his time.

A friend—

To every manufacturer who realizes that he must get a proper control over the three big factors of his business—men, minutes and money—or go out of business.

INTERNATIONAL TIME RECORDERS

You can get into this "No Trouble" picture gallery and put every one of your associates in it too by installing a modern, up-to-date time recording system. Remember we make Dial, Card and Cost-keeping Recorders of many sizes and styles and no time-keeping requirement is too complicated for us to handle. We make 95% of the world's requirements in time recorders.

Let us show what we can do for YOU

The International Time Recording Co. of Canada, Limited

Anderson St., Toronto

Winnipeg

Vancouver

Montreal:

F. E. Mutton, Gen. Man. 400 Electric Ry. Bldg.

817 Pender St. W.

Cor. McGill and Notre Dame Sts.



648. **Boots and Shoes.**—A Durban firm is prepared to take up Canadian boots and shoes. Full particulars are requested and, where possible, samples on leading lines costing from \$1.75 to \$3.25 a pair.
649. **Cart, Carriage and Wagon Iron and Steel.**—A Durban firm of cart, carriage and wagon material suppliers requests correspondence from Canadian manufacturers of iron and steel for the above trade.
650. **Washing Machines.**—A South African firm asks for catalogues and price lists with full packing particulars regarding washing machines or any other lines of household utensils.
651. **Paints and Varnish.**—A Durban firm of general merchants is prepared to take up a line of Canadian paints and varnish. Colour cards, prices and literature with some samples requested.

BRYAN PONTIFEX CHARTERED ACCOUNTANT

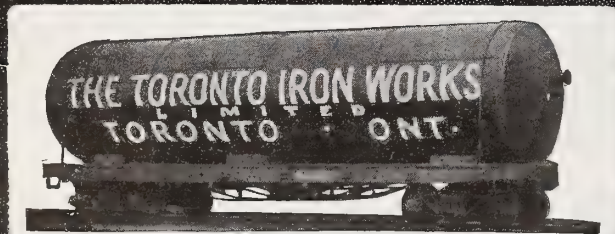
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1849

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Offices Throughout the Civilized World

Executive Offices: Nos. 346 and 348 BROADWAY, N.Y. CITY, U.S.A.

THE BRADSTREET COMPANY gathers information that reflects the financial condition and the controlling circumstances of every seeker of mercantile credit. Its business may be defined as of the merchants, by the merchants, for the merchants. In procuring, verifying, and promulgating information, no effort is spared, and no reasonable expense considered too great, that the results may justify its claims as authority on all matters affecting commercial affairs and mercantile credit. Its offices and connections have been steadily extended, and it furnishes information concerning mercantile persons throughout the civilized world.

Subscriptions are based on the service furnished, and are available only by reputable wholesale, jobbing and manufacturing concerns, and by responsible and worthy financial, fiduciary, and business corporations. Specific terms may be obtained by addressing the Company at any of its offices. CORRESPONDENCE INVITED.

Offices in Canada

Edmonton, Alta.	Hamilton, Ont.	London, Ont.
Halifax, N.S.	Ottawa, Ont.	Quebec, Que.
Montreal, Que.	Toronto, Ont.	Vancouver, B.C.
St. John, N.B.	Winnipeg, Man.	Calgary, Alta.
		Victoria, B.C.

THOS. C. IRVING, Gen. Man. Western Canada, Toronto

652. **Barrows.**—A Durban firm of hardware merchants requests full particulars from Canadian manufacturers of wheelbarrows.
653. **Binder Twine.**—A Durban firm of wholesale merchants asks for samples and quotations of Canadian-made binder twine.
654. **Metal Tags.**—An Irish tobacco manufacturing company asks to be placed in touch with Canadian manufacturers who can supply metal tags stamped with the firm's name, according to sample supplied to the Department of Trade and Commerce, Ottawa.
655. **Cart and Carriage Iron and Steel.**—An East London firm asks for catalogues and price-lists, and samples when possible, of any iron and steel carriageware.
656. **Twine.**—An East London firm of general importers requests samples and price lists from Canadian manufacturers of binder and other twine.
657. **Hand Carts.**—An East London firm of general importers requests correspondence from Canadian manufacturers of hand carts. Full particulars, catalogues and price lists required.
658. **Mica.**—An East Anglian firm asks for quotations for clear, transparent mica, also spotted mica, and would like to hear from Canadian producers.
659. **Organs.**—An East London firm asks for catalogues, price lists and particulars of weights on Canadian-made organs.
660. **Barite, Calcium Carbide and Cyanamide, Sulph. of Ammonia, Arsenic.**—A Russian manufacturing and trading company requiring alternative source of supply of the above raw materials and products desires to establish connections with Canada with a view to furthering trade relations after the war. Highest references given. Correspondence may be in English and French.
661. **Magnesite, Chrome, Graphite, Kieselguhr, etc.**—A London mineral firm wishes to get into direct touch with Canadian producers of magnesite, chrome, graphite, kieselguhr, and other refractory minerals and earths.
662. **Wood Goods.**—Boxboards, doors, mouldings, rock maple rollers 24 to 36 inches by 6 to 6½ inches (octagonal); rock maple rollers, 24 to 36 inches by 6½ to 10 inches diameter (octagonal). Spruce and hemlock broom handles. Turned woodware of all kinds. A Belfast firm asks for quotations.
663. **Moulded Material such as Used for Electrical Insulation, etc.**—An American company manufacturing phonographs would like to secure Canadian supplies of moulded material such as is used for electrical insulation, composition buttons, etc.
664. **Wrapping Paper.**—A South African firm asks for samples and prices of kraft wrapping paper. If proper sample is submitted, will order in large quantities.
665. **Hardware.**—A Johannesburg firm is prepared to purchase from Canada hardware shelf goods and building material, and in a special way are open for quotations on padlocks and locks, files, tools, cutlery, stoves, electric plate, grates and brass foundry.

NEW COMPANY FORMED.

The business of A. R. Whittall, manufacturers of cans, etc., Montreal, has been taken over by the A. R. Whittall Can Co., Limited, recently incorporated by letters patent granted by the Dominion of Canada. A. R. Whittall, D. S. Whittall, and F. R. Whittall continue in the ownership and management of the new company and no new capital has been taken into the business.

All Steel Electric Ovens

FOR BAKING ENAMEL OR VARNISH IN HIGH EXPLOSIVE SHELLS

EXPLOSIVE PROOF ELECTRIC UNITS

manufactured under HOSKINS' patents, will not explode enamel or varnish fumes. Owing to the heavy construction will not burn out, and are guaranteed for two years. Steel clad, thus protected from mechanical injuries.

FURNACE INSULATION

HOSKINS' electric ovens are insulated with the same high insulating material that has made HOSKINS' furnaces famous the world over. This material is not used by any other oven manufacturer, and will save from 15 to 20 per cent. on current consumption over other makes of ovens.

Canadian Hoskins Limited

ELECTRIC, GAS AND OIL FURNACES AND PYROMETERS

WALKERVILLE

TORONTO

MONTREAL

Great Opportunity

FOR FACTORY, MILL or FOUNDRY
For Sale at Beauport, Que.

LARGE BLOCK of substantial buildings in good repair, with two 70 horse-power boilers installed. Railway siding on site. Six minutes from city. Electric cars pass through property every 15 minutes. Beauport station adjoining. Also situated on main Electric Light and Power Line. Extends to River St. Lawrence; good wharf accommodation for unloading barges on property; a small river also runs through its length.

This attractive lot of land contains about half million feet, part of site being available for first-class building lots, without interfering with factory.

For manufacturing purposes, this property offers many advantages, being within easy reach of the city, but free from city taxes, and being situated in one of the most populous villages on the St. Lawrence, where good and cheap labor can easily be obtained.

Further particulars will be furnished on applying to

BOSWELL'S BREWERY
QUEBEC

Headquarters in Canada for

MAPLE SYRUP
MAPLE SUGAR
MAPLE BUTTER
PEANUT BUTTER
MOLASSES
CANE SYRUP
FRUIT PRESERVES
JAM, APPLE PULP
AND CONCENTRATED
JUICE FOR EXPORT

Maples Limited

Manufacturers and Refiners

TORONTO

CANADA

AMONG THE INDUSTRIES

Under this heading are published items of news of current interest concerning the activities of Canadian manufacturers. Information about changes of interest, enlargement of plants, and plans for future developments are always welcome, and are published free of charge, provided they should not be properly classified as advertisements.

*Items prefixed with an asterisk are based on official information received in each case from the companies mentioned. Other items, while secured usually from reliable sources, have not the same authoritative origin.

BRITISH COLUMBIA.

North Vancouver.

J. D. Shipton, 1146 Pendrill St., Vancouver, proposes to build a smelter with a capacity of 50 tons per day, and has applied to the Council for certain concessions.

The Canadian Robert Dollar Company are about to construct a sawmill and docks, at an approximate cost of \$200,000. The project includes an electrically operated sawmill, about 800 feet of dock, and twenty houses for employees.

South Vancouver.

The Dominion Glazed Pipe Company, Front Street, propose to build a plant for the manufacture of cement sewer pipe, and have been granted concessions by the Council.

The establishment of a rolling mill is contemplated by David Milne, Bowker ave., Victoria, and the Council have granted him certain concessions. Approximate cost, \$150,000.

Vancouver.

It is understood that contracts have been placed for the building of seven vessels for Norway, four with the Wallace Shipbuilding Yards and three with Coughlan & Company. The total value of the seven ships is \$9,600,000.

MANITOBA.

Winnipeg.

Fire on November 17th destroyed the Borbridge Company's harness factory on Ross ave. The loss is estimated at \$100,000.

NEW BRUNSWICK.

Fredericton.

Fraser's, Limited, Carleton Street, are considering the erection of a pulp mill, but have not yet decided upon a site.

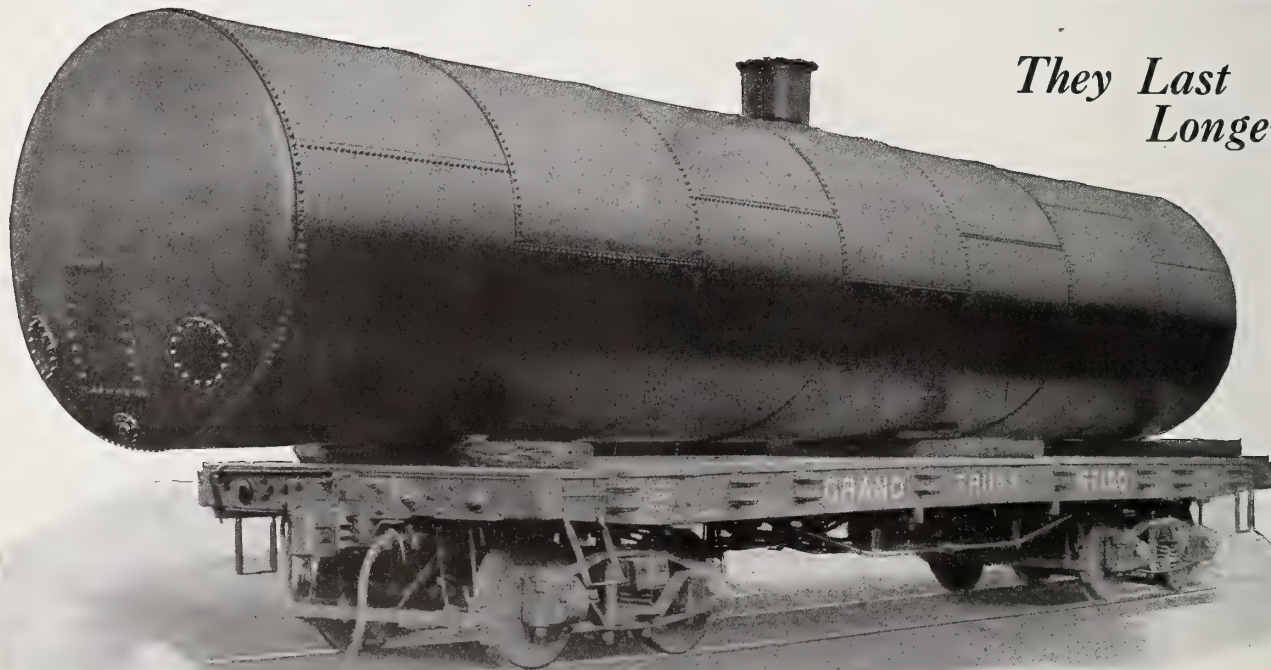
Marysville.

Contracts for mill work, brick, roofing and electrical work required in the erection of a warehouse for Canadian Cottons, Limited, will be let by the general contractors, Anglins, Limited, Montreal, and the contracts for elevator and sprinkler system will be let by the owners.

Millerton.

Arrangements for the reconstruction of the New Brunswick Pulp and Paper Company's paper mill, burned two years ago, have been made.

WATEROUS STEEL PLATE TANKS



*They Last
Longer!*

The Waterous Engine Works Co., Ltd., Brantford, Canada

When writing advertisers, please mention INDUSTRIAL CANADA.

BE UP-TO-DATE!



USE STEEL BARRELS FOR YOUR PRODUCT
*instead of the old-fashioned,
leaky wooden ones.*

THE SMART-TURNER MACHINE CO., Limited
HAMILTON - CANADA

"Metallic" Building Materials

We Have Lots of Corrugated Iron

Ready for shipment same
day as your order is re-
ceived. For those repair
jobs or extensions you are
thinking of, order NOW.

THE METALLIC ROOFING CO., Limited

Manufacturers of
"Eastlake" Shingles, "Empire" Corrugated Iron, etc., etc.
TORONTO - ONTARIO



1911 Coal Prices

You'd think yourself lucky if you could get 1916 coal at 1911 prices, wouldn't you? Yet, to-day, thanks to Hydro, you can get electric power at just about one-third of 1911 prices. If you are not yet using Hydro doesn't this suggest a big, new cost-cut in your plant?

Our Engineers estimate freely and completely

Toronto Hydro-Electric System

226 Yonge St.

Phone Adel. 2120

NOVA SCOTIA.

Shelburne.

Owing to the development in the shipbuilding industry here and the demand for marine oil engines, it is proposed to establish a plant for making gasoline engines.

ONTARIO.

Acton.

A by-law has been carried authorizing a loan and grant of a free site to the Reliance Shoe Company, 350 Sorauren Ave., Toronto, and the contract for the erection of a factory has been awarded and is estimated to cost \$13,000.

Barrie.

Fire on November 6th damaged the Barrie Carriage Co. factory. The loss is estimated at \$3,000.

Burlford.

The Canadian Milk Products Company, Mail Building, Toronto, are having a factory built by day labor. Estimated cost, \$20,000.

Canboro Township.

The American Gas and Gasoline Company proposes to construct a compressor plant. Agent, Eugene F. Deiner, Dunnville, Ontario.

Copper Cliff.

The Canadian Copper Co. are considering the enlargement of their smelting facilities and the increasing of their water power capacity.

Cornwall.

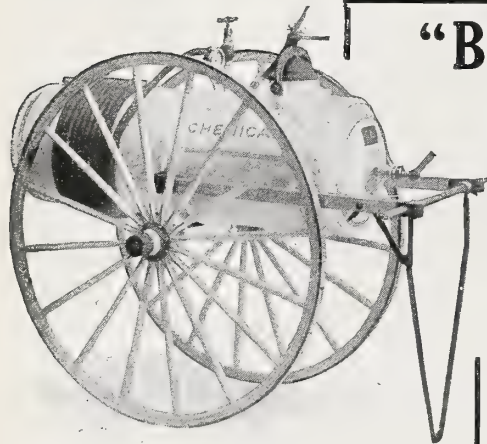
The Canadian Cotton Company, Montreal, have let the general contract for the erection of an addition to their plant. Brick construction. Approximate cost, \$32,000.

Deseronto.

Work is being rushed as fast as possible on the new building of the Dominion Hardwoods, Limited, here.

Dundas.

John Bertram & Sons Co., Limited, Hatt Street, are having plans prepared for an office building, estimated to cost \$35,000, but tenders may not be called until next spring.



"Bickle Junior" Chemical Fire Engine

Protect your factory and warehouse from fire with a "BICKLE JUNIOR." It throws a chemical stream fifty feet long or thirty-five feet high and has a greater fire killing power than 1,600 gallons of water! Only thirty inches wide over all, goes through ordinary door openings and can be stored in any handy place. Pull a lever, open a valve and within ten seconds stream is going full force. One man can handle with ease. Get one or more according to size of your plant. It means sure protection and reduced insurance rates.

Try It Before You Buy It

We will ship you a completely equipped "BICKLE JUNIOR" Chemical Engine on trial, F.O.B. Woodstock, Ont. Build a fire of old lumber, saturate with kerosene and try the "BICKLE JUNIOR" on the blaze. If it doesn't handle the fire with ease ship it back without any obligation on your part. Write for descriptive booklet.

THE R. S. BICKLE COMPANY

EVERYTHING IN FIRE APPARATUS
WINNIPEG, MAN. WOODSTOCK, ONT.

AEROPLANE PRODUCTS, LIMITED

44-50 PEARL STREET, TORONTO, ONT.

Aeroplane Metal Fittings, and all classes of machining, stamping, welding, brazing.

Prompt Deliveries.

DELANY & PETTIT, LIMITED

Joint and Veneer
Glue

Always uniform.

OFFICE:

133 Jefferson Avenue,
TORONTO, ONT.



Special Woodworking
Garnet Paper and
Cloth

WORKS:

105-131 Jefferson Avenue
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THE NICHOLS CHEMICAL COMPANY, LIMITED

MANUFACTURING CHEMISTS

HEAD OFFICE: 222 ST. JAMES STREET, MONTREAL

Branch Office—120 Mill Street, Toronto

WORKS: Capelton, Que., Sulphide, Ont., Barnet, B.C. WAREHOUSES: Montreal, Toronto

Sulphuric Acid
Muriatic Acid
Nitric Acid
Hydrofluoric Acid
Mixed Acid

Sulphate Soda
Sulphide Soda
Hypo-Sulphite Soda
Bi-Sulphite Soda
Phosphate Soda

Glauber's Salt
Blue Vitriol
Sulphate Alumina
Papermaker's Alum
Caustic Soda

Bleaching Powder
Tri-Sodium Phosphate
Ammonia
Salt Cake
Tin Crystals

Agents for Baker & Adamson's Chemically Pure Acids and Chemicals
AGENTS FOR CANADIAN SALT CO.—"WINDSOR" BRAND CAUSTIC SODA & BLEACHING POWDER

ECONOMY

Rapid production is dependent on the use of ECONOMICAL TOOLS AND STEEL. It is safer *not* to specify High Speed Steel, but

Demand "Tyr," the Economy Steel

MADE IN CANADA

ARMSTRONG, WHITWORTH OF CANADA

LIMITED

Offices, 22 Victoria Square, Montreal

Dominion Bank Building, Toronto

WORKS, LONGUEUIL, P.Q.



\$141,017.00 worth of abrasive wheels imported into this country in the last fiscal year, that should have been "MADE IN CANADA."

We can furnish the Canadian made goods of the best natural and artificial abrasives, by the vitrified or silicate process; in the latter, with or without the wire web.

Can be obtained from the following supply houses:

J. R. BAXTER & CO., LTD.
Montreal

H. W. PETRIE LTD.
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McDOUGALS LTD.
Ottawa

COWAN HARDWARE CO.
London

WALKERVILLE HDW. CO.
Walkerville

NORTHERN CAN. SUP. CO.
Cobalt

Or direct from the manufacturers,

DOMINION ABRASIVE WHEEL CO., LTD.
NEW TORONTO, ONT. CANADA



NOTICE

To Manufacturers, Dealers,
and Users of Steam Boilers.

All steam boilers built in, or entering the Province of Ontario, and boilers exchanged or repaired, are subject to Government Inspection as prescribed in the Steam Boilers Act, 3 George V., C. 61.

Before any work of repair or alteration is commenced on any boiler, notice must be sent to the Department stating the nature and extent of the repairs or alterations proposed to be made. If the Chief Inspector should consider such repairs or alterations of an extensive character, the boiler must be inspected in accordance with the Regulations by an Inspector authorized under the Act.

All communications should be addressed to the Steam Boiler Branch, Department of Public Works, Parliament Bldgs., Toronto.

HON. F. G. MACDIARMID,
Minister of Public Works.

D. M. MEDCALF,
Chief Inspector of Steam Boilers.

EXPORTERS OF

Reed Organs, Piano Stools,
Music Cabinets.

Catalogue B.



The Goderich Organ Co. Limited
GODERICH, CANADA



Closet Seats,

Flush Tanks,

Medicine Cabinets,

Everything for the Bath Room.

Write for Catalogue C. and Price List.



One or other of the "Famous Five" Files will be found on the benches in nearly every workshop in Canada.

The machine shop man likes them for their balance and cutting qualities.

The carpenter chooses them for the same reasons.

The blacksmith prefers them for their rugged strength.

Sixty millions of them are made and used every year.

And they always give satisfaction.

Specify them when ordering.

THE "FAMOUS FIVE" ARE

**Kearney & Foot
Great Western
American
Arcade
Globe**

(MADE IN CANADA)



(DEALERS EVERYWHERE)

Fort William.

The Fegles-Bellows Engineering Company have acquired a site on which they intend to erect a large warehouse or contractors' plant for repairing equipment, forging machinery bolts and doing structural work for the general contracting business. The company has submitted a letter to the Port Arthur Council asking for the construction of a bridge across the McIntyre River at Franklin Ave. The letter was referred to the Industrial Committee.

The contract for elevator equipment has been let in connection with the erection of an addition to the premises of the Canada Starch Company, Limited, Montreal and Fort William.

Galt.

The Galt Brass Company, Galt, Ont., propose to erect two new buildings which will double their capacity. Architect J. Evans has prepared plans for two modern structures—one, 50 ft. x 80 ft. in dimensions, two storeys with basement, and the other, 40 ft. x 60 ft., one storey. Both buildings will be constructed of brick and concrete and will be modern in every respect.

The general contract for the erection of a moulding shop for the Perfect Machine Company has been awarded and work has been started. The approximate cost is \$3,000.

The general contract for the erection of a factory, pressed brick construction, for Sheldon's, Limited, has been let. The approximate cost is \$18,000.

Goderich.

It is announced that the Doty Engine Co., Limited, has changed its name to that of the Britannic Engine Co., Limited.

Grimsby.

The Radiant Electric Company have awarded the general contract for the erection of an addition to their premises.

Guelph.

Tenders will be received for the erection of an addition to the factory of the Munder Tungsten Lamp Co., Limited. This will cost \$15,000, and will be of brick and mill construction.

The general masonry, carpentry, roofing, painting and electrical contracts for the erection of a moulding shop for the Guelph Stove Company have been let. Approximate cost, \$8,000.

The contracts for the erection of the new building for the Dalyte Lamp Co. have been awarded, and work has started. The building will cost about \$14,000.

Work will be commenced at an early date on the erection of an addition to the London Machinery Co., plant to cost \$6,000.

Hamilton.

Contracts have been let for the erection of an addition to the factory of the Cummer-Dowswell Company, Elgin and Barton Streets. Approximate cost, \$10,000.

The Parry Sound Basket and Veneer Co., which proposes to discontinue business in Parry Sound, may build a factory at Stoney Creek, near here.

The Turner, Day and Woolworth Handle Co., of Louisville, Ky., will erect a plant here.

Contract for the erection of an addition to the plant of the Standard Underground Cable Company of Canada, has been let. Estimated cost, \$30,000.

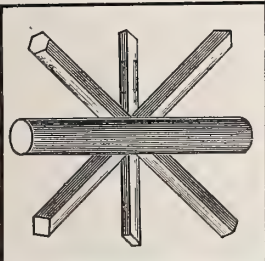
The American Can Company, Emerald and Shaw Streets, is considering the erection of an addition to its premises. Estimated cost, \$25,000.

TANKS FOR PULP AND PAPER MILLS, CHEMICAL
WORKS, OIL REFINERIES, ETC.

STEEL STRUCTURES
TO SUPPORT TANKS

WRITE FOR QUOTATIONS

MacKINNON, HOLMES & COMPANY, LIMITED
SHERBROOKE, QUEBEC



COLD DRAWN, TURNED AND POLISHED STEEL

SHAFTING

ROUNDS, SQUARES, HEXAGONS AND FLATS

$\frac{1}{8}$ in. to 6 in. Dia.

$\frac{1}{4}$ in. to $2\frac{1}{4}$ in.

$\frac{1}{4}$ in. to $2\frac{1}{4}$ in.

up to $1\frac{1}{2}$ in. x 3 in.

FREE CUTTING SCREW STOCK

PISTON AND PUMP RODS

FINISHED KEYS

The CANADIAN DRAWN STEEL CO., Limited
HAMILTON, ONTARIO

"CRANES MADE IN CANADA"



ELECTRIC TRAVELING CRANES

HAND POWER TRAVELING CRANES

ELECTRIC HOISTS

AIR HOISTS

FOUNDRY EQUIPMENT

NORTHERN CRANE WORKS, LIMITED - - - WALKERVILLE, ONTARIO

UNION DRAWN STEEL CO., Limited

HAMILTON, ONTARIO

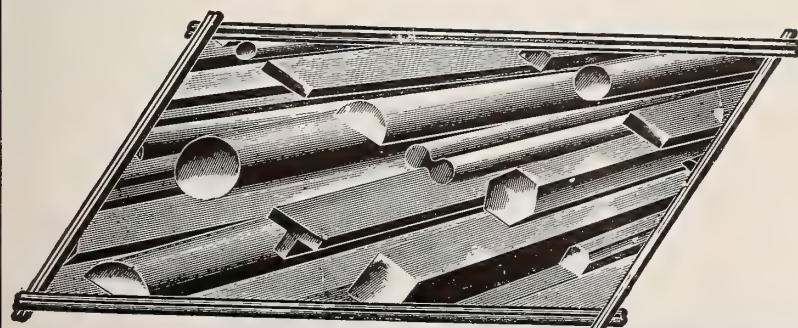
MANUFACTURERS OF

Shafting

Rounds, Flats, Squares
and Hexagons

LARGEST STOCK IN CANADA

Get prices before ordering elsewhere.



The proposed addition will be made to the Dominion Steel Castings Company at a cost of \$15,000.

The Watkins Medical Company, Winona, Mich., propose to build a factory in the spring.

The Tallman Brass Company have had plans prepared for an addition to their premises, to cost about \$4,000, and are also considering the erection of an addition, at an estimated cost of \$50,000.

The proposed addition to the plant of the Dominion Steel Castings Company, Depew Street, will be erected. The approximate cost is \$15,000.

Plans are being prepared for the new office building to be erected for the Canadian Westinghouse Company, on Sanford Ave. North, to be connected by a bridge with the main plant. This building will be five stories high, costing about \$150,000, and will consist of brick, stone and terra cotta.

Hawkesbury.

The Riordon Pulp & Paper Company, 1 Beaver Hall Square, Montreal, have awarded the general contract for the erection of a boiler house. Approximate cost, \$30,000.

Ingersoll.

That a large plant for the manufacture of automobile tires would be located in Ingersoll, was an announcement last month that created surprise and deep satisfaction among all classes of citizens. The proposed plant, it has been stated, when equipped, will cost about \$200,000. The Company will have a capitalization of \$1,000,000, and will furnish employment for upwards of 300 men, with a daily payroll of more than \$1,000. The plant will be one of the largest of the kind in Canada, and should mean much to the business activity of the town.

Kitchener.

Still further firms are erasing Berlin from their company name. Among the most recent are Berlin Felt Boot Co., Limited, changed to the Kitchener Felt Boot Company, Limited; Berlin Rubber Manufacturing Co., Limited, to Kitchener Rubber Manufacturing Co., Limited; and the Williams, Greene & Rome Co., of Berlin, Limited to simply The Williams, Greene & Rome Co., Limited.

The general contract for the erection of a factory for the Consolidated Felt Company has been let at an approximate cost of \$20,000.

Plans have been prepared for an addition to the premises of the W. E. Woelfle Shoe Company, Limited, 127 Wilmot St. Estimated cost, \$15,000.

Lindsay.

Flavelles, Limited, propose to rebuild their premises at once, at an approximate cost of \$75,000.

Markham.

The erection of a brick flour mill is being considered by A. W. Milne, F. E. N. Reesor, D. E. Jones, R. J. Carson and T. A. Young. Approximate cost, \$10,000.

Mimico.

The contract for the erection of a factory for the Dominion Abrasive Wheel Co., Limited, has been let. Estimated cost, \$65,000.

Montrose.

The Canadian Aloxite Company, Niagara Falls, has commenced the erection of an addition to its plant, and will do all work. The estimated cost is \$35,000.

THE CONSOLIDATED MINING AND SMELTING CO. OF CANADA, LIMITED

BUSINESS OFFICE AND WORKS: TRAIL, BRITISH COLUMBIA

SMELTERS AND REFINERS
Purchasers of all Classes of Ores

Producers of
TRAIL BRAND PIG LEAD

Eastern Agents : Thomas Robertson & Co., Limited, Montreal

To Parties Manufacturing, or Intending to Manufacture, in Canada

WE are prepared to produce, upon a large scale, articles of metal and wood.

Our facilities are those necessary for the extensive and economical manufacture of the heaviest freight cars and the highest class of passenger cars. These facilities include plants for the manufacture of steel, malleable and grey iron castings—rolled steel and iron products—frogs, switches and track work for electric and steam railways—coil and elliptic springs—forgings—cabinet and other wood work—and all preparatory and finishing adjuncts.

The various plants are distributed from Amherst, N.S., to Fort William, Ont.

Correspondence invited.

Please address Sales Department,
P.O. Box 180, Montreal

Canadian Car & Foundry Company, Limited
Canadian Steel Foundries, Limited
Pratt & Letchworth Company, Limited
Rhodes, Curry Company, Limited

New Toronto.

Buildings are now being erected for the Dupont Fabrikoid Company, Dufferin Street, and the work is being done under the supervision of the chief engineer. Estimated cost of buildings, \$75,000; estimated cost of machinery, \$175,000.

The contract has been awarded for the erection of a factory for the Dominion Abrasive Wheel Co., Limited. Estimated cost, \$65,000.

Niagara Falls.

Plans are being prepared for a factory for Nesbitt, Billings & Company. The building will be of reinforced concrete and will cost \$15,000.

Orillia.

Hector McLean, Orillia, or 77 Seventh Street, Toronto, has commenced the erection of a planing mill on Front Street, and will do all work.

Owen Sound.

A by-law is contemplated to raise \$15,000 by way of a loan to the Keenan Woodenware Company, to enable them to enlarge their business to include the manufacture of refrigerators.

Port Arthur.

James Whalen, of Port Arthur, and John Burnham, of Chicago, by an investment of \$1,500,000 have secured exclusive control of the Western Drydock and Shipbuilding Company here. They have contracts for several boats, and assurances that the plant can be kept going at full capacity indefinitely. They expect to turn out twelve boats in 1917.

Port Colborne.

Contract has been let in connection with the erection of the refinery for the International Nickel Company, Exchange Place, New York.

BEVERIDGE PAPER CO., LTD.

Paper Mill Agents—Merchants—Mill Supplies

The mills we represent can supply promptly all qualities Wrappings, including Waterproof Papers which the Department of Trade and Commerce urges exporters to use, and our twine reinforced "Tufenuf" replaces Burlap. Also genuine Parchments, Glassines, and Blottings.

Steam Plants: PROTECTO and PROTECTOCOAT will cut your fuel bill 25 to 50%, and not pollute steam. Let us quote you on your paper wants, and send you our Boiler Preservative Booklet—it will pay!

Buy Matches As You Would Any Other Household Commodity —With An Eye to Full Value!

When you buy Eddy's Matches,
you receive a generously-filled
box of SURE, SAFE Lights

ASK FOR
EDDY'S "SILENT PARLOR" MATCHES

LACQUERS

Bronzing Liquids (Banana Oil), Amyl Acetate, Incandescent Lamp Coloring, Fusel Oil, and Specialties

MANUFACTURED BY

Cosmos Chemical Co.
PORT HOPE, ONT.

PRESSES

Made in Canada

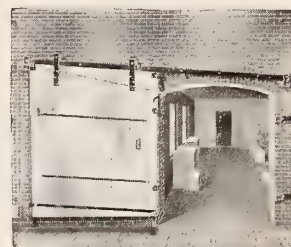
**HYDRAULIC PRESSES, PUMPS
AND ACCUMULATORS**

Forging, Nosing and Marking Presses for all Size Shells
Presses for General Purposes

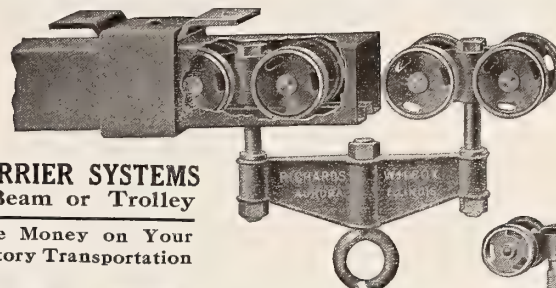
**WILLIAM R. PERRIN, Limited, TORONTO
CANADA**



Warehouse Door Hardware of all kinds for any purpose



Fire Door Hardware—All Styles with Underwriters' Label



CARRIER SYSTEMS
I-Beam or Trolley
Save Money on Your
Factory Transportation



**BULLDOG STEEL
JOIST HANGERS**
They never let go!
Stronger than
malleable

"R-W" HANGERS and Carrier Systems are specified by leading architects and engineers throughout Canada and the United States. Catalogues and estimates will be cheerfully furnished.

Richards-Wilcox
CANADIAN COMPANY, LTD.
LONDON, ONTARIO.



"R-W" Trolleys are best for all sliding doors



We manufacture Babbitt Metal for every purpose.

Our XXX Genuine Arctic
is especially adapted for

Heavy Duty Work
such as Marine and Automobile Engines.

Tallman's Special
For General Machinery Bearings.

WHAT WE MAKE WE GUARANTEE

Tallman Brass & Metal Co.
HAMILTON, ONT.

Northern Aluminum Co. LIMITED

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Sheet, Ingot, Rod,
Wire, Tubing,
Rivets, Extruded
Shapes, Bronze
Powder and Fabric-
ated articles.

We solicit
your enquiries
and will be glad
to serve you. Our
experience and know-
ledge of the metal will be
of value to you.

ALUMINUM

Write Us

NORTHERN ALUMINUM CO., LIMITED

**Made
in
Canada**



**From
British
Stock**

**"GENUINE OAK"
LEATHER BELTING**

**"D.K."
BALATA BELTING**

Guaranteed to Give Satisfaction

D. K. McLAREN LIMITED

TORONTO MONTREAL ST. JOHN, N.B.
247 Beatty Street, VANCOUVER
Engineer's Supply Co., 123 Bannatyne Ave. E., WINNIPEG

Renfrew.

In connection with the factory addition which is now being built for the Renfrew Textile Company, all work will be done by the general contractor. Approximate cost, \$10,000.

St. Catharines.

The general contract for the erection of premises for the St. Catharines Steel & Metal Company has been awarded. Frame and corrugated iron construction.

Contracts have been awarded for the erection of a machine shop for the Metal Drawing Company. Estimated cost, \$10,000.

The Packard Electric Company, Mill St., has awarded the general contract for the erection of a machine shop. Estimated cost \$3,000.

Sarnia.

The Imperial Oil Company has secured a large tract of land at the south end of the city and will start construction of another refinery in the very near future. The new plant will cost several hundred thousand dollars in initial outlay, and will be enlarged later.

Smith's Falls.

Work is about to start on the erection of a plant, frame construction, for the Canadian Coopage Manufacturing Company, Box 734. Approximate cost, \$20,000.

Thorold.

Contracts have been let in connection with the factory addition now in course of erection for the Exolon Company. The approximate cost is \$100,000.

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QUEBEC



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**SUPERIOR QUALITY LEATHER
BELTING AND LACE LEATHER**

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that jarring, grinding noise in your machine
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that noise? You can do it
by using

**NEW PROCESS GEARS
RAWHIDE PINIONS**

They last indefinitely too.

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The upper contact points are set to the maximum size—the lower to the minimum. Lay the screw between the upper points and let it "find its own level." Can anything be simpler?



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WELLS LIMIT GAGES

Send us an outline of your requirements. We will plan the gages for your output.

Wells Bros. Company of Canada, Limited

GALT - ONTARIO

Manufacturers of the celebrated *Little Giant* line of
TAPS, DIES and SCREW PLATES, GAGES AND REAMERS

Toronto.

The Canadian National Carbon Company has taken out a permit for a three-story factory on Paton Road, to cost \$23,402.

Baynes and Peckover, 98 Esplanade East, propose to build a warehouse, at an approximate cost of \$25,000 to \$50,000, and have secured a site at the foot of Cherry Street from the Harbor Commission. Plans will be prepared by the Company's staff.

Plans have been prepared for a brick factory to be built at 14 Darling Ave., for the Dominion Machinery Company, 110 Church Street. Estimated cost, \$5,500.

Cluff Company, 28 Atlantic Ave., propose to build a saw shop, at a cost of \$3,000, and have had plans prepared.

The keels of two freighters for trans-Atlantic service between New York and Norway have been laid at the yards of the Polson Iron Works, Limited. The two vessels will cost about \$1,200,000. The vessels must be delivered in July and August of next year. It is understood that Christoffer Hannevis, Christiania, Norway, for whom the vessels are being constructed, will close a contract for the building of two more freighters of practically the same dimensions.

In connection with the erection of an addition to the factory of P. W. Ellis Company, Wellington St. East, tenders on felt roofing and galvanized iron work are now being received. The approximate cost of additions is \$12,000.

Ewing & Murphy, 18 Cameron Street, have commenced the erection of an addition to their planing mill, and will let contracts for plumbing, wiring, heating and roofing. Mill and brick construction. Estimated cost, \$6,000.

The Dominion Machinery Company, 110 Church Street, are receiving tenders on brick work (labor only), required in the erection of a factory on Darling Avenue. Approximate cost of building, \$5,500.

John Morrow Screw & Nut Co., Limited

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Manufacturers of

CAP SCREWS SET SCREWS
SEMI-FINISHED AND FINISHED NUTS
TWIST DRILLS AND REAMERS

Reasonably good delivery can be given on
HIGH SPEED DRILLS

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Regular monthly sailings from Montreal in Summer and St. John, N.B., in Winter, calling at Cape Town, Algoa Bay (Port Elizabeth), East London, Port Natal (Durban) and Delagoa Bay in the order named.

Sailings 20th of each month.

All steamers fitted with refrigerators for the carriage of perishable freight.

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Australia and New Zealand

Regular monthly sailings from Montreal in summer and St. John in winter, calling at Adelaide, Melbourne and Sydney (Australia), and Auckland, Wellington, Lyttelton and Dunedin (New Zealand). Sailings 20th of each month.

Through bills of lading issued to all points in Australia, New Zealand, Tasmania and other islands of Oceania.

Marine Insurance effected at rates equal to those given from New York.

For rates and other information apply to

The New Zealand Shipping Co.
LIMITED

213 Board of Trade Building, Montreal

Work is about to start on the erection of an addition to the abattoir of Gunns, Limited, Gunns Road. Estimated cost is \$3,500.

The Dunlop Tire & Rubber Goods Company, 244 Booth Avenue, have commenced the erection of a storehouse of frame and galvanized iron construction, estimated to cost \$5,500.

Work has been started on wrecking existing premises at 64 Duke Street preparatory to the erection of a factory for F. Daville, 191 George Street. Plans have been prepared and general contract let.

Tenders have been received for the erection of an addition to the premises of Booth, Coulter Copper & Brass Company, Limited, 115 Sumach Street, but no contracts have been awarded. The estimated cost is \$5,000.

The general contract for the erection of an addition to the factory of the Toronto Laundry Machine Company, 802 Dundas Street, has been let, and work has been started. Approximate cost, \$7,500.

The business of manufacturing artificial flowers and feathers, previously carried on under the name of Mrs. Josephine Witt, is now being conducted as a limited company under the name of Witts, Limited, at the same place.

S. S. White Dental Manufacturing Company, Limited, is now to be known as the S. S. White Co. of Canada, Limited.

The Hamilton Gear & Machine Company has commenced the erection of an addition to its plant to cost \$7,500.

Trenton.

The British Chemical Company have awarded the contract for the construction of their plant. The project includes about forty buildings of reinforced concrete and steel construction, and is estimated to cost \$500,000.

Glues, Gelatines Size, Isinglass, Manures, etc.

THE GROVE CHEMICAL CO., LIMITED

Manufacturers (Estd. 1856)

APPLEY BRIDGE, Nr. WIGAN, ENG.

Offer all grades in large and small quantities for immediate shipment and contract bookings.

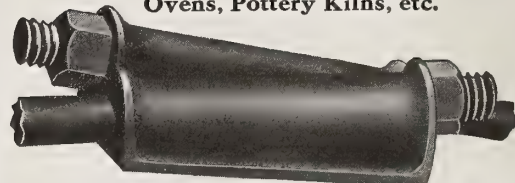
Enquiries for Samples and Quotations promptly attended to, and Orders Booked at Toronto.

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For round Rods $\frac{3}{8}$ to $1\frac{1}{2}$ inch

Flat Bands 2 to 6 inches wide

Best Malleable Iron—Prompt Shipments.

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OTTERVILLE, ONT.

SINCE 1896

The Canadian Northern Railway has become a great national institution in Canada, serving :—

GRAIN

Collecting elevators having 26 % of the total capacity of Western Canada are served by the Canadian Northern Railway; licensed elevators having 47 % of the total capacity in Canada are on the Canadian Northern Railway line.

FLOUR

Flour Mills having 51 % of the total daily capacity in Canada are on lines of the Canadian Northern Railway. In British Columbia, the C.N.R. proportion is 90%; in Alberta 44%; in Saskatchewan 74%; in Manitoba 81%; in Ontario 34%; in Quebec 90%; in Nova Scotia 15%. At Duluth, which is considered separately, the daily capacity is 5,500 barrels per day.

LUMBER

Lumber mills producing 30 % of the output in Canada are served by the Canadian Northern Railway, while 32 % of the total is marketed by water. In British Columbia the Canadian Northern proportion is 34%; in Alberta, Saskatchewan and Manitoba 70%; in Ontario 33%; in Quebec 28%; in Nova Scotia 28%.

PULP AND PAPER

Pulp and Paper Plants having 53 % of the capacity of Canada are served by Canadian Northern Railway lines. In Ontario the Canadian Northern proportion is 60 %; in Quebec 64 %; and in Nova Scotia 50 %.

TEST CANADIAN NORTHERN SERVICE

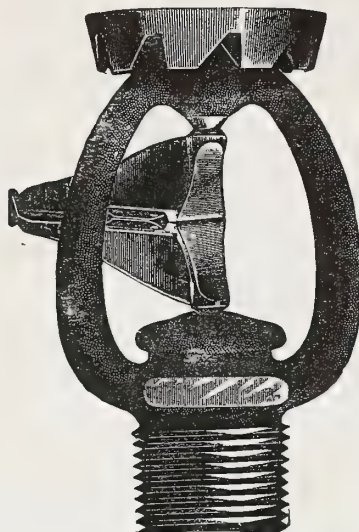
It should be of particular interest to manufacturers to remember, that while the Canadian Northern Railway opened vast areas to settlement, it also sought successfully for the immigrants to people in part the lands so made available. The lines to that great market from the centres of Ontario and Quebec, and from Victoria to Vancouver are now in operation. It will be well worth while to test the service.

Principal Offices at: Halifax, N.S.; Quebec, Que.; Montreal, Que.; Ottawa, Ont.; Toronto, Ont.; Port Arthur, Ont.; Winnipeg, Man.; Regina, Sask.; Saskatoon, Sask.; Prince Albert, Sask.; Edmonton, Alberta; Calgary, Alberta; Kamloops, B.C.; New Westminster, B.C.; Vancouver, B.C.; Victoria, B.C.



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Cut your Insurance in half by having us
instal an

Automatic Fire Sprinkler System

throughout your Factory, Store or Ware-
house.

The Original



The Best

Write us for Estimates

Correspondence Solicited

Wahnapiatae.

The British American Nickel Corporation propose to build a nickel refinery, but have not yet started work on the plans.

Whitby.

The Canadian Tractor Company proposes to build a factory on Ontario Street at an approximate cost of \$60,000. Plans will be prepared if the by-law passes. Particulars from Guy R. Creelman, Fenton, Michigan.

Warton.

The lumber mill of Johnson, Hunter and Crawford was recently destroyed by fire. Loss, \$10,000. Owners are considering rebuilding.

Windsor.

The Sterne Tire and Tube Company, of Canada, Limited, will build a plant here for the manufacture of a new kind of automobile tire, invented and placed on the market by Edward Sterne, of St. Louis, Mo. The factory will be built on Howard Ave.

QUEBEC.

Cap Madeleine.

The new mill of the St. Maurice Paper Company, upon which construction was started in May of this year, will be completed and ready for operation by January 1st, 1917, as the work upon same is progressing favorably and no delays are anticipated.

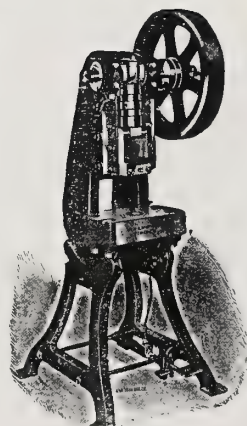
Drummondville.

The sash and door factory of J. A. Nadeau was recently destroyed by fire. Loss, \$15,000. Owner may rebuild.

DARLINGS STEAM APPLIANCES

DARLING BROTHERS LIMITED
Engineers and Manufacturers
MONTREAL, CANADA

Branches: Toronto and Winnipeg Agents: Halifax, St. John, Calgary, Vancouver



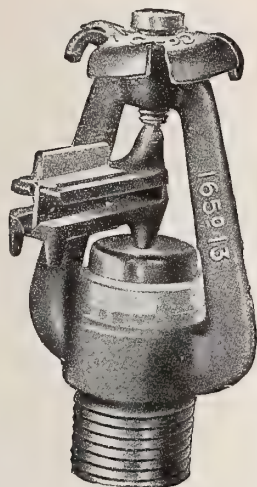
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Will Save You Endless Worry

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Protect yourself and your business by installing a system of

Manufacturers' Automatic Sprinklers

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Goold, Shapley & Muir Co.

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**TANKS
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also wood and steel tanks for Municipal, Railway and Suburban water supply.

All our tanks and towers are built to pass inspection of any Board of Fire Underwriters.

Send for special tank and tower catalogue.

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For Municipal, Railroad
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Washed Cotton Wipers

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Write us for prices on our brands

SELECT WHITE MIXED COLORED
DARK COLORED

SCYTHES & COMPANY, LIMITED
Manufacturers and Jobbers, Toronto, Montreal

WASHED COTTON WIPERS

Granby.

Myer's Box Company are considering the erection of an addition to their plant. Particulars from the Superintendent, A. S. Myer.

The general contract has been awarded for the erection of an extension to the factory of the Granby Chair Company. Sub-tenders on roofing, heating, plumbing and electrical work are now being received. The approximate cost is \$10,000.

The general contract for the erection of an addition to the premises of the Canadian Consolidated Rubber Company has been let. Estimated cost, \$5,000.

Joliette.

J. Dufresne is having a factory office built by day labor under the supervision of H. Contre. This will be of brick construction and will cost approximately \$3,000.

Lachute Mills.

E. Charlesbois has commenced the erection of a sash and door factory, brick construction, estimated to cost \$10,000.

Montreal.

Plans have been perfected for increasing the output of the St. Lawrence Pulp and Lumber Corporation to 75,000 tons annually, against present capacity of 37,500 tons of sulphite pulp annually.

The Clark Shoe Company, St. Stephen's, N.B., proposes to build a factory.

The Dominion Cutlery Company, Limited, 591 St. Catherine St. W., is considering the erection of a factory.

The large and old established firm of A. R. Whittall, manufacturers of cans and containers, is another convert to the limited liability ranks. This firm will now be known as the A. R. Whittall Can Co., Limited.



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Underwear, Hosiery and Sweaters
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Lumbermen's Socks, etc.

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ST. HYACINTHE AND COATICOOK, QUEBEC

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MONTREAL COTTONS

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MANUFACTURERS OF

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LAWNS

WHITE NAINSOOKS

and

DYED COTTONS

OF EVERY DESCRIPTION



Canadian Manufacturers

OF

OVERALLS, SMOCKS

Working Shirts

House Dresses, Nurses' Uniforms, Children's Frocks

and other garments of this class can put more value into their products, without increasing costs, by using Dominion Textile

"Rockfast" Drills

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instead of imported fabrics. Our cottons, "Made in Canada," carry no duty—give more value at a price than any imported goods—and are the logical raw materials for "Made in Canada" garments.

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Operating Twelve Mills;

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Manufacturing White and Grey Cottons, Prints, Sheetings, Shirtings, Pillow Cottons, Longcloths, Cambrics, Ducks, Bags, Twills, Drills, Quilts, Bureau Covers, Towels and Towelling, Blankets, Rugs, Twines and many other lines used by Manufacturers in Rubber and other Trades.

The International Machineries, Limited, has awarded the general contract for the erection of a factory on Notre Dame St. East.

The contracts for electrical work and heating have been let in connection with the factory which has been built for Alexander McArthur & Company, Limited.

W. C. Mooney, Senneville Road, Ste. Anne de Bellevue, is considering the erection of a factory.

The contract for the erection of a factory for the F. & B. Shoe Manufacturing Company, 510 Lasalle Ave., has been let.

St. Hughes.

Fire recently destroyed the sash and door factory of Adelard Paquette, causing a loss of \$20,000. The premises will be rebuilt, and machinery for steam power is required

St. John's.

The foundry and machine shop of St. John's Machine and Tool Company were recently destroyed by fire. Loss, about \$16,000.

Three Rivers.

The Dominion Sugar Company proposes to erect a refinery. Estimated cost, \$150,000.

SASKATCHEWAN.

Pegina.

In connection with the factory which is now in course of erection for the Prairie Biscuit Co., Limited, tenders on plumbing, heating, electric wiring and motors are now being received by the owners.

JULIUS COHEN & JOSEPHY

Foreign **WOOL** *Noils, Wastes*
Domestic *and Shoddy*

Also operating THE YORKSHIRE WOOL STOCK MILLS, TORONTO
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HEATERS

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TORONTO
WINNIPEG
VANCOUVER

McClary's

ST. JOHN, N.B.
CALGARY

HAMILTON
SASKATOON
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BUYERS' GUIDE TO CANADIAN MANUFACTURES

A List of Articles Which Will Enable the Purchaser to Know the Manufacturers of Made-in-Canada Goods. For Rates for Insertion in this Department Write to the Advertising Manager of Industrial Canada, Toronto.

ABRASIVE MATERIALS

- *Canadian Hart Wheels, Ltd., Hamilton, Ont.
- *Dominion Abrasive Wheel Co., New Toronto, Ont.

ACCOUNT BOOKS

- *The Brown Bros., Ltd., Toronto.

ACETYLENE GAS BURNERS

- Economic Acetylene Burner Co., Toronto.

ACIDS

- *The Grasselli Chemical Co., Ltd., Toronto.
- *The Nichols Chemical Co., Ltd., Montreal.

ADVERTISING NOVELTIES

- Lawson & Jones, Ltd., London, Ont.

AERATED BEVERAGES

- Charles Gurd & Co., Ltd., Montreal, Que.
- J. J. McLaughlin, Ltd., Toronto.

AIR COMPRESSORS

- *Canadian Ingersoll-Rand Co., Sherbrooke, P.Q.
- *Jenckes Machine Co., Sherbrooke, P.Q.
- *Smart-Turner Machine Co., Ltd., Hamilton, Ont.

ALCOHOL

- The St. Hyacinthe Distillery Co. Ltd., St. Hyacinthe, Que.
- *Hiram Walker & Sons, Limited, Walkerville, Ont.

ALE

- E. L. Drewry, Winnipeg, Man.

ALUMINUM

- *Northern Aluminum Co., Ltd., 1305 Traders Bank, Toronto.

ALUMINUM CASTINGS

- *Tallman Brass & Metal Co., Hamilton, Ont.

AMMONIA

- Canadian Ammonia Co., Ltd., Toronto.

ANGLE BARS

- *The Steel Company of Canada, Limited, Hamilton, Ont.

ASBESTOS:

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS SHEATHING:

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS SHEET AND PISTON PACKINGS

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS STEAM PIPE AND BOILER COVERINGS

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS TEXTILES:

- *Eureka Mineral Wool & Asbestos Co., Toronto.

AUTOMOBILE ACCESSORIES,

- *Northern Electric Co., Limited, Montreal.
- *Tallman Brass & Metal Co., Hamilton, Ont.

AUTOMOBILE PARTS

- *Dominion Forge & Stamping Co., Walkerville, Ont.

AWNING CORD (cotton)

- Hamilton Cotton Co., Hamilton, Ont.

AXLES

- Canada Forge Co., Ltd., Welland, Ont.
- Guelph Spring & Axle Co., Ltd., Guelph, Ont.

AXLES, carriage and automobile

- Guelph Spring & Axle Co., Ltd., Guelph, Ont.

BABBITT METAL

- Alonzo W. Spooner, Limited, Port Hope, Ont.
- *The Canada Metal Co., Toronto.
- *Tallman Brass & Metal Co., Hamilton, Ont.

BACON

- E. W. Fearman Co., Ltd., Hamilton, Ont.

BAGS

- *Scythes & Co., Ltd., Toronto.

BAGS, Cotton

- The Canadian Bag Co., Ltd., Montreal, Que.

BAGS, jute

- The Canadian Bag Co., Ltd., Montreal, Que.
- *Scythes & Co., Ltd., Toronto.

BAGS, travelling

- J. Eveleigh & Co., Ltd., Montreal, Que.
- Lamontagne, Ltd., Montreal, Que.
- The M. Langmuir Mfg. Co., of Toronto, Ltd., Toronto.

BAKING JAPAN

- *Berry Bros., Ltd., Winnipeg, Man.

BAND RESAWS:

- *P. B. Yates Machine Co., Ltd., Hamilton, Ont.

BANK AND OFFICE RAILINGS

- *The Geo. B. Meadows, Toronto.
- Wire, Iron & Brass Works Co., Ltd., Toronto.
- *Canada Wire and Iron Works, Hamilton, Ont.

BANK FITTINGS

- The Canadian Office & School Furniture Co., Ltd., Preston, Ont.

BANK RAILINGS AND CAGES

- *Canada Wire and Iron Goods Co., Hamilton, Ont.
- *Dennis Wire & Iron Works Co., London.

BANK SIGNS AND FITTINGS

- *Tallman Brass & Metal Co., Hamilton, Ont.

BARRELS, steel, and containers

- *Smart-Turner Machine Co., Ltd., Hamilton, Ont.

BARS, iron

- London Rolling Mill Co., Limited, London, Ont.

BARS, steel

- London Rolling Mill Co., Limited, London, Ont.

BASEBALL GOODS

- A. J. Reach Co., Brantford, Ont.

BATHS, enamelled

- Amherst Foundry Co., Ltd., Amherst, N.S.

BATTERIES, dry

- The Canadian National Carbon Co., Ltd., Toronto.
- Canadian Carbon Company, Ltd., Toronto.

BEARINGS

- *The Chapman Double Ball Bearing Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BEARINGS, bronze

- *Tallman Brass & Metal Co., Hamilton, Ont.

BEARINGS, pillow block and up-right

- *Dodge Mfg. Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BEARINGS

- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BEDS, camp folding

- *Otterville Mfg. Co., Ltd., Otterville, Ont.

BEEF

- E. W. Fearman Co., Ltd., Hamilton, Ont.

BEER

- E. L. Drewry, Winnipeg, Man.

BELTING, chain conveyors

- *Canadian Link Belt Co., Toronto.

BELTING, chains

- *Dodge Mfg. Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BELTING, Elevator

- *Canadian Consolidated Rubber Co., Ltd., Montreal, Que.

BELTING, leather

- The Beardmore Belting Co., Ltd., Toronto.

- *J. L. Goodhue & Co., Danville, P.Q.

- *Sadler & Howarth, Montreal.

- *The D. K. McLaren Belting Co., Ltd., Montreal.

- *The J. C. McLaren Belting Co., Ltd., Montreal.

BELTING, rubber

- *Canadian Consolidated Rubber Co., Ltd., Montreal, Que.
- *Gutta Percha & Rubber, Limited, Toronto.

BENT GOODS

- The Crown Lumber Co., Woodstock, Ont.

BICYCLES AND ACCESSORIES

- *Canada Cycle and Motor Co., Ltd., Toronto.

BISCUITS

- The Montreal Biscuit Co., Montreal, Que.

BLACK SHEETS

- *A. C. Leslie & Co., Montreal.

BLANKETS

- Slingsby Mfg. Co., Ltd., Brantford, Ont.

- J. Walsham & Son, Ltd., Bolton, Ont.

BLANKETS, horse

- Slingsby Mfg. Co., Ltd., Brantford, Ont.

- J. Walsham & Son, Limited, Bolton, Ont.

BLASTING ACCESSORIES

- Canadian Explosives, Ltd., Montreal, Que.

BLEACHING POWDER

- Canadian Salt Co., Ltd., Windsor, Ont.

BLOWERS

- *Sheldons, Ltd., Galt, Ont.

BOATS OF ALL KINDS

- Peterboro Canoe Co., Ltd., Peterboro, Ont.

BOILER COMPOUND and OILS

- Electric Boiler Compound Co., Ltd., Guelph, Ont.

BOILER PRESERVATIVES

- *Beveridge Paper Co., Limited, Montreal, Que.

BOILERS

- *M. Beatty & Sons, Ltd., Welland, Ont.

- *Darling Bros., Montreal.

- *Goldie & McCulloch Co., Limited, Galt, Ont.

- John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.

- *Polson Iron Works, Ltd., Toronto.

- J. & R. Weir, Montreal, Que.

- Taylor-Forbes Co., Ltd., Guelph, Ont.

- *Jenckes Machine Co., Sherbrooke, Que.
- *The Waterous Engine Works Co., Ltd., Brantford.

BOILERS, hot water or steam.

- Steel & Radiation, Ltd., Toronto.
- Warden King, Ltd., Montreal, Que.

BOILERS, steam.

- *Jenckes Machine Co., Sherbrooke, Que.

- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

- Steel and Radiation Ltd., Toronto.

- Warden King, Ltd., Montreal, Que.

- *The Waterous Engine Works Co., Ltd., Brantford, Ont.

BOILERS, steam and brass work

- *The Waterous Engine Works Co., Ltd., Brantford, Ont.

BOILER STANDS

- Anthes Foundry Ltd., Toronto.

BOLSTERS

- *Canadian Car & Foundry Co., Ltd., Montreal, Que.

BOLTS

- *The National Acme Mfg Co., Montreal, Que.

BOLTS AND NUTS

- *The Canadian Tube & Iron Co., Ltd., Montreal, Que.

- *The Steel Company of Canada, Limited, Hamilton, Ont.

- Starr Mfg. Co., Ltd., Dartmouth, N.S.

BOOKBINDERS

- R. G. McLean, Toronto.
- *The Brown Bros., Ltd., Toronto.

BOOKCASES

- *Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

BOOKCASES, sectional (Gunn)

- The George McLagan Furniture Co., Ltd., Stratford, Ont.

BOOKLETS

- Stone Limited, Toronto.
- R. G. McLean, Toronto.

BOOKS, blank

- *The Brown Bros., Ltd., Toronto.

BOOTS AND SHOES

- Ames-Holden-McCreedy, Ltd., Montreal, Que.

- J. Leckie Co., Ltd.

- The John Ritchie Co., Ltd., Quebec, Que.

BOXES, cellular board:

- *The Thompson & Norris Co. of Canada, Ltd., Niagara Falls.

BOXES, rattle and soap

- The Arlington Co. of Canada, Ltd., Toronto.

BOXES AND SHOOKS, wooden

- The C. Beck Mfg. Co., Ltd., Penetanguishene, Ont.

BOXES, wooden

- G. & J. Esplen, Montreal, Que.
- Barchard & Co., Ltd., Toronto.

BRAIDS AND TRIMMINGS

- The Moulton Mfg. Co., Limited, Montreal.

BRAKE SHOES

- *Canadian Hart Wheels, Limited, Hamilton, Ont.

BRANDS, burning

- Pritchard, Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

BRASS BOLTS AND NUTS

- *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS, BRONZE and ALUMINUM LETTERS

- *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS ENGRAVERS

- Pritchard, Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

BRASS FOUNDERS AND FINISHERS

- *The Booth-Coulter Copper & Brass Co., Ltd., Toronto.
- *Tallman Brass & Metal Co., Hamilton, Ont.



By Royal Warrant

“Canadian Club” Whisky

Fully Ripened in Wood. Age Guaranteed by Government.

QUALITY UNEXCELLED

Distilled and Bottled by

HIRAM WALKER & SONS
LIMITED

Walkerville, Canada

LONDON
MEXICO CITY

CHICAGO
VICTORIA, B.C.

NEW YORK
WINNIPEG

BRASS GOODS

*The Booth-Coulter Copper & Brass Co., Ltd., Toronto.
 *Mueller Mfg. Co., Sarnia.
 The Garth Co., Montreal, Que.
 The James Morrison Brass Mfg. Co., Ltd., Toronto.
 *The Kerr Engine Co., Ltd., Walkerville, Ont.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS PLATES

Geo. Booth & Son., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS RODS, SHEETS AND PLATES

*Brown's Copper and Brass Rolling Mills, Ltd., New Toronto.

BRASS SIGNS AND MEMORIALS

*Tallman Brass & Metal Co., Hamilton, Ont.

BRASS TUBING, seamless

Canadian Seamless Wire Co., Ltd., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS WIRE

Canadian Seamless Wire Co., Ltd., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS WORK, church

Pritchard, Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

BRASS WORK, special

Bawden Machine Co., Ltd., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.
 *Booth-Coulter Copper & Brass Co., Ltd., Toronto.
 *The Watrous Engine Works Co., Ltd., Brantford, Ont.

BRICK

National Brick Co. of Laprairie, Laprairie, P.Q.
 Port Credit Brick Co., Port Credit, Ont.

BRICK, enamel

National Brick Co. of Laprairie, Laprairie, P.Q.

BRICK, pressed

National Brick Co. of Laprairie, Laprairie, P.Q.

BRICK, rubbing

*Canadian Hart Wheels, Limited, Hamilton, Ont.

BRICK, sewer

National Brick Co. of Laprairie, Laprairie, P.Q.

BRIDGES, Railway and Highway

*Dominion Bridge Co., Montreal.
 *Hamilton Bridge Works Co., Ltd., Walkerville, Ont.
 *The Canadian Bridge Co., Ltd., Hamilton, Ont.
 *The Structural Steel Co., Limited, Montreal, Que.

BROOMS

Simms, T. S., & Co., Limited, St. John, N.B.
 Stevens-Hepner Co., Limited, Port Elgin, Ont.

BRUSHES

Simms, T. S., & Co., Limited, St. John, N.B.
 Stevens-Hepner Co., Limited, Port Elgin, Ont.

BRUSHES, carbon

Canadian National Carbon Co., Ltd., Toronto.

BUCKET TANKS

*The General Fire Equipment Co., Limited, Toronto, Ont.

BUCKLES, shoe and coat

Farmer & Bulloch Co., Limited, Gananoque, Ont.

BUILDING BLOCKS, vitrified, salt glazed

Standard Clay Products, Ltd., St. John, Que.

BUILDING FELT and PAPER

*Eureka Mineral Wool & Asbestos Co., Toronto.
 *Paterson Manufacturing Company, Toronto and Montreal.

BUILDERS, ship

*Polson Iron Works, Limited, Toronto.
 J. & R. Weir, Montreal, Que.

BURLAPS

The Canadian Bag Co., Limited, Montreal, Que.
 *Scythes & Co., Ltd., Toronto.

BURLAPS, decorative

Dominion Oil Cloth Co., Limited, Montreal, Que.

CABLE, Copper and galvanized

*The Steel Co. of Canada, Ltd., Hamilton, Ont.

CABLES, transmission and tele-phones

*Eugene F. Phillips Electrical Works, Ltd., Montreal, Que.

CABLES, Transmission and Cable

*Northern Electric Co., Limited, Montreal, Que.

CABLES, wire

The Dominion Wire Rope Co., Ltd., Montreal, Que.
 *The B. Greening Wire Co., Ltd., Hamilton, Ont.

CALENDARS, ADVERTISING

NOVELTIES, etc.
 Rolph & Clark, Limited, Toronto.
 Lawson & Jones, Limited, London, Ont.
 Stone Limited, Toronto.

CAMERAS

Canadian Kodak Co., Limited, Toronto.

CAMPERS' OUTFITTERS

Slingsby Mfg. Co., Ltd., Brantford, Ont.

CANOEES

Peterboro Canoe Co., Ltd., Peterboro, Ont.

CANS, baking powder, etc.

American Can Co., Montreal and Hamilton.
 A. R. Whittall, Montreal, Que.

CANS, fruit

American Can Co., Montreal and Hamilton.
 A. R. Whittall, Montreal, Que.

CANS, tin

A. R. Whittall, Montreal, Que.
 American Can Co., Montreal and Hamilton.

CANS, iron, lead and putty

A. R. Whittall, Montreal, Que.

CANVAS

*Scythes & Co., Ltd., Toronto.

CAPS, cloth

John W. Peck & Co., Ltd., Montreal, Que.

CARBIDE

*Canada Carbide Co., Ltd., Montreal, Que.
 *Union Carbide Co. of Canada, Ltd. Works, Welland, Ont. Head Office, Toronto.

CARBON BRUSHES

Canadian Carbon Co., Limited, Toronto.

CARBON PRODUCTS

Canadian Carbon Co., Limited, Toronto.

CARBONS, arc light

Canadian Carbon Co., Limited, Toronto.
 The Canadian National Carbon Co., Ltd.

CARBONS, flame

Canadian Carbon Co., Limited, Toronto.

CARBONIC ACID GAS

Canadian Carbonate Company, Ltd., Montreal, Que.
 *Canada Carbide Co., Ltd., Montreal, Que.
 *Union Carbide Co., Welland, Ont.

CARD RECORD SYSTEMS

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

CARPETS AND RUGS

Toronto Carpet Mfg. Co., Limited, Toronto.

CARPETS AND RUGS, Axminster and ingrain

Toronto Carpet Mfg. Co., Limited, Toronto.

CARPETS AND RUGS, Brussels and Wilton

Toronto Carpet Mfg. Co., Limited, Toronto.

CARPET YARNS, worsted and wool

Toronto Carpet Mfg. Co., Limited, Toronto.

CARRIAGES, baby, etc.

Canada Furniture Manufacturers, Ltd., Woodstock, Ont.

CARRIERS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

CARRIERS, box and barrel

*Canadian Mathews Gravity Carrier Co., Limited, Toronto.

CARRIERS, brick

*Canadian Mathews Gravity Carrier Co., Limited, Toronto.

*Richards-Wilcox Canadian Co., Ltd., London, Ont.

CARS

*Canadian Car & Foundry Co., Ltd., Montreal, Que.

*National Steel Car Co., Limited, Hamilton, Ont.

CARS, industrial

*Sheldons, Ltd., Galt.

CARTONS, lithographed

Harris Lithographing Co., Toronto.

CASTINGS

*Tallman Brass & Metal Co., Hamilton, Ont.

CASTINGS, aluminum

*Booth-Coulter Copper & Brass Co., Limited, Toronto.

CASTINGS, brass

*Tallman Brass & Metal Co., Hamilton, Ont.

*Booth-Coulter Copper & Brass Co., Limited, Toronto.

CASTINGS, brass and bronze

*Tallman Brass & Metal Co., Hamilton, Ont.

CASTINGS, grey iron

*Dodge Mfg. Co., Toronto.

*Canadian Car & Foundry Co., Ltd., Montreal, Que.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

*Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.

John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.

CASTINGS, malleable iron

*Galt Malleable Iron Co., Ltd., Galt, Ont.

*Pratt & Letchworth Co., Brantford, Ont.

CASTINGS, steel

*Canadian Steel Foundries, Ltd., Montreal, Que.

*Dominion Steel Foundry Co., Ltd., Hamilton, Ont.

*Hull Iron and Steel Foundry, Ltd., Hull, P.Q.

*Joliette Steel Co., Ltd., Montreal.

*Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.

CATALOGUE MAKERS

Grip, Ltd., Toronto.

R. G. McLean, Toronto.

CAUSTIC SODA

Canadian Salt Co., Ltd., Windsor, Ont.

CELLBOARD

Adams Cellboard Co., Toronto, Ont.

CEMENT GUNS

Steel and Radiation, Ltd., Toronto.

CHAIN, silent drive

*Canadian Link Belt Co., Toronto.

CHAIRS

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

CHAIRS, assembly hall

Stratford Mfg. Co., Ltd., Stratford, Ont.

CHAIRS, folding

Stratford Mfg. Co., Ltd., Stratford, Ont.

*Imperial Rattan Co., Ltd., Stratford, Ont.

CHAIRS, rattan and upholstered

Imperial Rattan Co., Ltd., Stratford, Ont.

CHEMICALS

*Cosmos Chemical Co., Port Hope.

*The Grasselli Chemical Co., Ltd., Toronto.

*The Nichols Chemical Co., Ltd., Montreal, Que.

CHEMICAL LABORATORY**APPARATUS**

The Geo. M. Hendry Co., Limited, Toronto.

CHICLETS AND CHEWING GUM

Canadian Chewing Gum Co., Ltd., Toronto.

CIGARS

Ed. Youngheart & Co., Limited, Montreal, Que.

CIGARETTES AND TOBACCO

Philip Morris & Co., Limited, Montreal, Que.

CIRCULAR CUTTERS, solid steel

The Peter Hay Knife Co., Limited, Galt, Ont.

CLAM SHELL BUCKETS

*M. Beatty & Sons, Ltd., Welland, Ont.

CLOCKS, TIME

*International Time Recording Co. of Canada, Ltd., Toronto.

CLOCKS, WATCHMEN'S

The General Fire Equipment Co., Limited, Toronto.

CLOSET SEATS

*Goderich Organ Co., Goderich, Ont.

CLOTHING

John W. Peck & Co., Ltd., Montreal, Que.

Mackenzie & Co., Ottawa, Ont.

*A. R. Clarke & Co., Ltd., Toronto.

*The Carss Mackinaw Clothing Co., Ltd., Orillia, Ont.

CLOTHING, Mackinaw

The Carss Mackinaw Clothing Co., Ltd., Orillia, Ont.

CLOTHES LINES, cotton

Hamilton Cotton Co., Hamilton, Ont.

CLUTCHES

*Dodge Mfg. Co., Ltd., Toronto.

CLUTCHES, conveyors

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

COAL

*Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N.S.
 Standard Fuel Co., Toronto.

COBALT OXIDE

The Coniagas Reduction Co., Ltd., St. Catharines, Ont.

COCOA AND CHOCOLATE

PREPARATIONS
 Walter Baker & Co., of Canada, Ltd., Montreal, Que.

COFFEE

S. H. Ewing & Sons, Montreal, Que.

*The Canadian Drawn Steel Co., Ltd., Hamilton, Ont.

*Union Drawn Steel Co., Limited, Hamilton, Ont.

*The Canadian Drawn Steel Co., Ltd., Hamilton, Ont.

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CONDUITS FOR INTERIOR**WIRING**

*Conduits Company, Ltd., Toronto.

CONFECTIONERY

Ganong Bros., Ltd., St. Stephens, N.B.
Moires, Limited, Halifax, N.S.
The Montreal Biscuit Co., Montreal, Que.

CONTAINER BOARD—strong container

Bathurst Lumber Co., Ltd., Bathurst, N.B.

CONTRACTORS' PLANT

*M. Beatty & Sons, Ltd., Welland, Ont.

CONVEYORS

*Canadian Mathews Gravity Carrier Co., Toronto.
*Dodge Mfg. Co., Ltd., Toronto.
*Jenckes Machine Co., Sherbrooke, Que.

COPPER

*Eugene F. Phillips, Electrical Works, Limited, Montreal.
*Booth-Coulter Copper & Brass Co., Limited, Toronto.

COPPER SHEETS AND PLATES

*Booth-Coulter Copper & Brass Co., Limited, Toronto.
*Tallman Brass & Metal Co., Hamilton, Ont.

COPPERSMITHS

*Booth-Coulter Copper & Brass Co., Limited, Toronto.

COPPER TUBING, seamless

Canadian Seamless Wire Co., Ltd., Toronto.
*Booth-Coulter Copper & Brass Co., Limited, Toronto.

COPPER WIRE

Canadian Seamless Wire Co., Ltd., Toronto.

CORKS

S. H. Ewing & Sons, Montreal, Que.

CORK CARPET

Dominion Oil Cloth Co., Ltd., Montreal, Que.

CORRUGATED PAPER BOXES

Adams Cellboard Co., Toronto.
*Hinde & Dauch Paper Co., Toronto.
*Martin Corrugated Paper & Box Co., Limited, Toronto.
*The Thompson & Norris Co. of Canada, Ltd., Niagara Falls, Ont.

CORSETS

Dominion Corset Co., Quebec, Que.

COTTONS

*Dominion Textile Co., Limited, Montreal, Que.
*Montreal Cottons, Ltd., Valleyfield, P.Q.

COTTONADES

Hamilton Cotton Co., Hamilton, Ont.

COUPLERS

*Canadian Steel Foundries, Ltd., Welland, Ont.

CRANES

*Northern Crane Works, Walkerville, Ont.

CRANES, locomotive

*Canadian Link Belt Co., Toronto.

COUPLINGS

*Dodge Mfg. Co., Ltd., Toronto.

CRANKSHAFTS

Canada Forge Co., Ltd., Welland, Ont.

CREAM CHEESE, Ingersoll

The Ingersoll Packing Co., Limited, Ingersoll, Ont.

CREAM SEPARATORS AND MILK CLARIFIERS

De Laval Dairy Supply Co., Peterboro, Ont.

CREAMERY AND CHEESE FACTORY MACHINERY AND SUPPLIES

De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

CREOSOTED MATERIALS

*Paterson Mfg. Co., Toronto and Montreal.

CRUSHED STONE

The Hagersville Contracting Co., Limited, Hagersville, Ont.

CRUSHING ROLLS

*Jenckes Machine Co., Sherbrooke, Que.

CUPOLAS

*Sheldons, Ltd., Galt, Ont.
*Northern Crane Works, Limited, Walkerville, Ont.

CUPS, presentation

Standard Silver Co., Toronto.

CUPS, grease and oil

*The Canadian Winkley Co., Ltd., Windsor, Ont.

CURLED HAIR

*Delany and Pettit, Ltd., Toronto.

CURTAINS, chenille

Hamilton Cotton Co., Hamilton, Ont.

CUTLERY

Standard Silver Co., Toronto.

CUTTERS, (Machine)

*Pratt & Whitney Co., Dundas, Ont.

DENIMS

Hamilton Cotton Co., Hamilton, Ont.

DERAILS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

DESIGNERS

Ontario Engraving Co., Hamilton, Ont.

DESIGNERS and PRINTERS OF BOOKLETS, ETC.

Grip, Ltd., Toronto.

DESKS

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

DINING ROOM SUITES

The George McLagan Furniture Co., Limited, Stratford, Ont.

DIES

*Butterfield & Co., Rock Island, P.Q.
*Pratt & Whitney Co., Dundas, Ont.

DISINFECTING APPARATUS

Spramotor Co., London, Ont.

DOOR HANGERS

*Richards Wilcox Canadian Co., Ltd., London, Ont.

DRAPERY AND UPHOLSTERY GOODS

Daly & Morin, Montreal, Que.

DREDGES

*M. Beatty & Sons, Limited, Welland, Ont.

DRESSING, belt

Sadler & Haworth, Montreal, Que.

DRESS AND CLOAK TRIMMINGS

J. Henry Peters Co., 1 Mincing St., Toronto.

DRILLS

*John Morrow Screw & Nut Co., Limited, Ingersoll, Ont.

*Pratt & Whitney Co., Dundas, Ont.

DRILLS, rock

*Canadian Ingersoll Rand Co., Sherbrooke, Que.

*Jenckes Machine Co., Sherbrooke, Que.

DRIFT BOLTS OR SPIKES

London Rolling Mill Co., Limited, London, Ont.

DROP FORGINGS

*Canadian Billings & Spencer, Ltd., Welland, Ont.

DRUMS, steel, and containers

*Smart-Turner Machine Co., Ltd., Hamilton, Ont.

DRY CELLS, electric

Canadian Carbon Co., Limited, Toronto.

DRY COLORS

P. D. Dods & Co., Ltd., Montreal, Que.

The Imperial Varnish & Color Co., Limited, Toronto.

R. C. Jamieson & Co., Ltd., Montreal, Que.

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

DUMB WAITERS

Turnbull Elevator Mfg. Co., Toronto.

DURABLE WIRE ROPE

The Dominion Wire Rope Co., Ltd., Montreal, Que.

DYNAMITE

Canadian Explosives, Limited, Montreal, Que.

DYNAMOS

Consolidated Electric Co., Limited, Toronto.

*Jones & Moore Electric Co., Ltd., Toronto.

*The Canadian Crocker-Wheeler Co., Limited, St. Catharines, Ont.

DYNAMOS, plating

*Jones & Moore Electric Co., Ltd., Toronto.

EIDERDOWN

Galt Knitting Co., Ltd., Galt.

ELECTRIC APPLIANCES

*Canadian Crocker-Wheeler Co., Limited, St. Catharines, Ont.

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

ELECTRICAL COMPOUNDS

Standard Paint Co. of Canada, Ltd., Montreal, Que.

ELECTRICAL AND GAS FIXTURES

The Garth Co., Montreal, Que.

The James Morrison Brass Mfg. Co., Limited, Toronto.

*Tallman Brass and Metal Co., Hamilton, Ont.

ELECTRIC LAMPS

Packard Electric Co., Limited, Toronto.

ELECTRIC PLATE WARE

Roden Bros., Ltd., Toronto.

ELECTRIC BATTERIES

Canadian Carbon Co., Limited, Toronto.

ELECTROTYPING

Central Press Agency, Toronto.

ELECTRICAL SUPPLIES

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

*Jones & Moore Electric Co., Ltd., Toronto.

*Northern Electric Co., Limited, Montreal, Que.

ELECTRO-SILVER PLATED WARE

Standard Silver Co., Toronto.

ELEVATING MACHINERY

*Canadian Mathews Gravity Carrier Co., Toronto.

ELEVATORS

*Jenckes Machine Co., Sherbrooke, Que.

Turnbull Elevator Manufacturing Company, Toronto.

*The Watrous Engine Works Co., Ltd., Brantford, Ont.

*Northern Crane Works, Limited, Walkerville, Ont.

ELEVATORS FOR ALL PURPOSES

*The Watrous Engine Works Co., Limited, Brantford, Ont.

ELEVATOR GATES AND DOORS

Turnbull Elevator Mfg. Co., Ltd., Toronto.

ELEVATOR GUARDS

*The Geo. B. Meadows, Toronto

Iron and Brass Goods Works Co., Limited, Toronto.

*Canada Wire and Iron Works, Hamilton, Ont.

ELEVATORS, hydraulic and electric

John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.

EMERY DRESSERS and STANDS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

EMERY GRINDERS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

EMERY WHEELS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

EMERY WHEEL GUARDS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

ENAMELS

R. C. Jamieson & Co., Limited, Montreal, Que.

ENAMEL MANUFACTURERS and DECORATORS

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

ENAMEL AND TIN WARE

McClary Mfg. Co., London, Ont.

ENGINES

*E. Leonard & Sons, London, Ont.

*Goldie & McCulloch Co., Limited, Galt, Ont.

J. & R. Weir, Montreal, Que.

*Jenckes Machine Co., Sherbrooke, Que.

*Polson Iron Works, Limited, Toronto.

*Sheldons, Ltd., Galt, Ont.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

ENGINES, gas and gasoline

*Goold-Shapley-Muir Co., Limited, Brantford, Ont.

*Massey-Harris Co., Ltd., Toronto.

ENGINES, gasoline, tractor, plowing and threshing

*Sawyer-Massey Co., Ltd., Hamilton, Ont.

ENGINES, hoisting

*M. Beatty & Sons, Welland, Ont.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

ENGINES, steam plowing and threshing

Sawyer-Massey Co., Limited, Hamilton, Ont.

ENGRAVERS

Grip, Limited, Toronto.

Ontario Engraving Co., Hamilton, Ont.

Rolph & Clark, Limited, Toronto.

Stone, Limited, Toronto.

ENGRAVERS, half-tone

Grip, Limited, Toronto.

Ontario Engraving Co., Hamilton, Ont.

ENGRAVERS, wood

Ontario Engraving Co., Hamilton, Ont.

ENGRAVERS AND PRINTERS steel plate

American Bank Note Co., Ottawa, Ont.

ENGRAVERS AND PRINTERS banknote

American Bank Note Co., Ottawa, Ont.

ENGRAVING

*J. L. Jones Engraving Company, Toronto.

ENGRAVING, copper and steel plate

Pritchard-Andrews Co. of Ottawa, Limited, Ottawa, Ont.

ENSILAGE AND STRAW CUTTERS

J. Fleury's Sons, Aurora, Ont.

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

ENVELOPES

Barber-Ellis Co., Ltd., Toronto.

Canada Envelope Co., Montreal, Que.

EXCELSIOR

*Delany & Pettit, Ltd., Toronto.

EXCELSIOR PADS

*Delany & Pettit, Ltd., Toronto.

Garman & Bulloch Co., Limited, Gananoque, Ont.

EXPERTS IN PATENT CAUSES

Ridout & Maybee, Toronto.

EXPLOSIVES, high

Canadian Explosives Ltd., Montreal, Que.

FACE PLATE JAWS

Ker & Goodwin, Brantford, Ont.

FACTORY SUPPLIES, cheese and creamery

De Laval Dairy Supply Co., Ltd., Montreal, Que.

J. Henry Peters Co., 1 Mincing St., Toronto.

FANS

*Sheldons, Limited, Galt, Ont.

PASTENERS, belt

*Sadler & Haworth, Montreal, Que.

FELTS, PULP and PAPER MAKERS

Ayers Limited, Lachute Mills, P.Q.

FENCES AND GATES

*Dennis Wire & Iron Works Co., London, Ont.

*Canada Wire and Iron Works, Hamilton, Ont.

FENCING AND GATES, woven wire

Banwell Hoxie Wire Fence Co., Hamilton, Ont.

*Canada Wire and Iron Goods Co., Hamilton, Ont.

FENCING, wire

C. H. Johnson & Sons, Limited, Montreal, Que.

FIBRE PAIRS

*The E. B. Eddy Co., Ltd., Hull, Que.

FILES

Henry Disston & Sons, Limited, Toronto.

*The Nicholson File Co., Port Hope, Ont.

FILING CABINETS

*Office Specialty Co., Newmarket, Ont.

FILING EQUIPMENT, wood & steel

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

FILING SYSTEMS

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

FIRE ALARMS

*Northern Electric Co., Limited, Montreal, Que.

FIRE DOOR HARDWARE

*Richards Wilcox Canadian Co., Limited, London, Ont.

FIRE DOORS

*A. B. Ormsby Co., Ltd., Toronto.

FIRE ENGINES</

FIRE ESCAPES

*Canada Wire and Iron Goods Co., Hamilton, Ont.
 *Dennis Wire & Iron Works Co., London, Ont.

FIRE EXTINGUISHERS

*R. S. Bickle Co., Woodstock.
 *A. B. Ormsby Co., Ltd., Toronto.
 *Booth-Coulter Copper and Brass Co., Limited, Montreal, Que.
 *The General Fire Equipment Co., Limited, Toronto, Ont.

FIRE FIGHTING APPARATUS

*The Watrous Engine Works Co., Limited, Brantford, Ont.

FIRE HOSE

*Canadian Consolidated Rubber Co., of Canada, Limited, Montreal, Que.
 *Gutta Percha and Rubber, Ltd., Toronto.

FIRE PREVENTION MATERIAL

*Chicago Bridge & Iron Works, Bridgeburg, Ont.
 *Eureka Mineral Wool & Asbestos Co., Toronto.
 *The General Fire Equipment Co., Limited, Toronto.

FIRE PROOF WINDOWS AND DOORS

*A. B. Ormsby Co., Ltd., Toronto.
 *Pedlar People, Ltd., Oshawa, Ont.
 *Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

FIRE SPRINKLER SYSTEMS

*Chicago Bridge & Iron Works, Bridgeburg, Ont.
 *The General Fire Equipment Co., Limited, Toronto.
 *Purdy Mansell Co., Toronto.
 *H. G. Vogel Co., Montreal, Que.

FIRE AND WATER DEPARTMENT SUPPLIES

*Chicago Bridge & Iron Works, Bridgeburg, Ont.
 *The Garth Co., Montreal, Que.

FISH, Atlantic Sea-Foods

*Maritime Fish Corporation Ltd., Montreal, Que.

FITTINGS FOR SOIL PIPE

*Anthes Foundry, Ltd., Toronto.

FITTINGS, steam

*Warden King, Ltd., Montreal, Que.

FLAGS

*Scythes & Co., Limited, Toronto.

FLASHLIGHTS

*Canadian Carbon Co., Toronto.

FLOORING, hardwood

*Seaman Kent Co., Ltd., Meaford, Ont.

FLUE LINERS

*Standard Clay Products, Ltd., St. Johns, Que.

FORGES

*Sheldons, Limited, Galt, Ont.

FORGINGS

*Canada Forge Co., Ltd., Welland, Ont.
 *The Steel Co. of Canada, Limited, Hamilton, Ont.

FORGINGS, drop

*Dominion Forge and Stamping Co., Walkerville, Ont.

FOUNDRY EQUIPMENT

*Northern Crane Works, Limited, Walkerville, Ont.

FOUNTAIN FRUITS and Juices

*J. J. McLaughlin, Ltd., Toronto.

FRICTION CLUTCH PULLEYS

*Dodge Mfg. Co., Ltd., Toronto.

FROGS AND CROSSINGS, manganese

*Canadian Ramapo Iron Works, Ltd., Niagara Falls, Ont.

FUEL

*Standard Fuel Co., Toronto.

FUR GARMENTS, men's and women's

*Holt, Renfrew, Ltd., Quebec.

FUR GOODS

*John W. Peck & Co., Limited, Montreal, Que.

FUR TRIMMINGS, ornaments and buttons

*J. Henry Peters Co., 1 Mincing St., Toronto.

FURNACES

*McClary Mfg. Co., London, Ont.
 *The Jas. Smart Mfg. Co., Limited, Brockville, Ont.

FURNACES, hot air

*Bedford Stove Co., Bedford, Que.

FURNACES, oil burning

*Canadian Hoskins Co., Walkerville, Ont.
 *Mechanical Engineering Works, Montreal, Que.

FURNITURE, hall

*The George McLagan Furniture Co., Limited, Stratford, Ont.

FURNITURE, office

*The Canadian Office and School Furniture Co., Ltd., Preston, Ont.

FURNITURE, reed and rattan

*Imperial Rattan Co., Ltd., Stratford, Ont.

FUSES

*Economy Fuse and Mfg. Co., Montreal.

GALVANIZED IRON

*A. C. Leslie & Co., Montreal.

GALVANIZED SHEETS

*Dominion Sheet Metal Co., Hamilton, Ont.

GALVANIZERS

*Acme Stamping & Tool Works, Ltd., Hamilton, Ont.
 *Ontario Wind Engine and Pump Co., Limited, Toronto.

GASOLINE ENGINES

*Ontario Wind & Pump Co., Ltd., Toronto.
 *De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

GASOLINE FIRE ENGINES

*The Watrous Engine Works Co., Ltd., Brantford, Ont.

GASOLINE MOTORS, "Imperial" Marine

*Bruce Stewart & Co., Ltd., Charlottetown, P.E.I.

GASOLINE STORAGE SYSTEMS, special underground

*S. F. Bowser & Co., Toronto.

GASOLINE

*The Imperial Oil Co., Limited, Toronto.

GEARS, cut

*Hamilton Gear & Machine, Toronto.

GENERATORS

*Canadian Crocker-Wheeler Co., Ltd., St. Catharines, Ont.
 *Canadian Westinghouse Co., Ltd., Hamilton, Ont.

GINS

*The Melchers Gin & Spirits Distillery Co., Ltd., Montreal, Que.

GLASSWARE

*Dominion Glass Co., Limited, Montreal, Que.

GLASSWARE, cut

*Roden Bros., Ltd., Toronto.

GLASS FOR BUILDINGS

*Toronto Plate Glass Importing Co., Limited, Toronto.

GLASS BENDERS

*Toronto Plate Glass Importing Co., Limited, Toronto.

GLASS, mirror

*Toronto Plate Glass Importing Co., Limited, Toronto.

GLOVES AND MITTS

*A. R. Clarke & Co., Ltd., Toronto.
 *Craig, Cowan Co., Ltd., Toronto.

GLUE

*Canada Glue Co., Ltd., Brantford.
 *Delany and Pettit, Ltd., Toronto.

GOLD-FILLED WIRE AND PLATE

*Canadian Seamless Wire Co., Toronto.

GOLD AND SILVER REFINERS

*Canadian Seamless Wire Co., Toronto.

GRAIN CRUSHERS (Rapid Easy)

*J. Fleury's Sons, Aurora, Ont.

GRAPE JUICE

*J. J. McLaughlin, Ltd., Toronto.
 *The Welch Co., Ltd., St. Catharines.

GRATES

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

GRAVITY CARRIERS

*Canadian Mathews Gravity Carrier Co., Toronto.

GRILLES, metal

*Canada Wire & Iron Goods Co., Hamilton, Ont.
 *Dennis Wire & Iron Works Co., London, Ont.

GRINDERS, Pedestal and Bench

*Canadian Hart Wheels, Limited, Hamilton, Ont.

GRINDING and Polishing Machinery

*Canadian Hart Wheels, Limited, Hamilton, Ont.

GRINDING WHEELS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

*The Dominion Abrasive Wheel Co., Limited, New Toronto.

GRINDSTONES

*Richards-Wilcox Canadian Co., Limited, London, Ont.

GUNN SECTIONAL BOOKCASES

*The Geo. McLagan Furniture Co., Limited, Stratford, Ont.

GUY ANCHORS

*B. J. Coghlin Co., Ltd., Montreal.

GYPSUM, crushed

*Albert Mfg. Co., Hillsborough, N.B.

GYPSUM PRODUCTS

*Manitoba Gypsum Co., Ltd., Winnipeg, Man.
 *De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

HALL FURNITURE

*The Geo. McLagan Furniture Co., Limited, Stratford, Ont.

HAMS

*F. W. Fearman Co., Ltd., Hamilton, Ont.

HANDLES (Axe, pick, sledge hammers, etc.)

*The Lachute Shuttle Co., Limited, Lachute Mills, P.Q.

HANGERS

*Dodge Mfg. Co., Ltd., Toronto.
 *The Goldie & McCulloch Co., Ltd., Galt, Ont.

HARDWARE

*Richards-Wilcox Canadian Co., Limited, London, Ont.
 *Taylor-Forbes Co., Limited, Guelph, Ont.
 *The Jas. Smart Mfg. Co., Limited, Brockville, Ont.

HARDWOOD FLOORING

*Wilson Bros. Limited, Collingwood, Ont.

HARDWOOD INTERIOR FINISH

*Wilson Bros., Ltd., Collingwood, Ont.

HARDWOOD VENEER DOORS TO DETAIL

*Wilson Bros., Ltd., Collingwood, Ont.

HARNESSES

*Lamontagne Ltd., Montreal, Que.

HATS, men's straw

*The Crown Hat Co., Limited, Galt, Ont.

HATS, ladies' and children's straw

*The Crown Hat Co., Limited, Galt, Ont.

HATS, ladies' and children's felt and beaver

*The Crown Hat Co., Limited, Galt, Ont.

HATS, ladies' felt and straw

*Toronto Hat Mfg. Co., Toronto.

HAULAGE, Wire Rope

*The Dominion Wire Rope Co., Ltd., Montreal, Que.

HEATERS

*Watrous Engine Works Co., Ltd., Brantford, Ont.

HEATERS, feed water

*Darling Bros., Ltd., Montreal.
 *The Goldie & McCulloch Co., Ltd., Galt, Ont.

HEATING APPLIANCES

*C. A. Dunham Co., Ltd., Toronto.
 *Darling Bros., Ltd., Montreal.
 *Sheldons, Limited, Galt, Ont.

HEATING SYSTEMS

*C. A. Dunham Co., Ltd., Toronto.

HESSIANS

*The Canadian Bag Co., Limited, Montreal, Que.
 *Scythes & Co., Limited, Toronto.

HINGES

*The Steel Co. of Canada, Limited, Hamilton, Ont.

HOISTS

*M. Beatty & Sons, Ltd., Welland, Ont.
 *Northern Crane Works, Limited, Walkerville, Ont.

HOISTS, electric and pneumatic

*M. Beatty & Sons, Ltd., Welland, Ont.
 *Canadian Link Belt Co., Toronto.
 *Northern Crane Works, Limited, Walkerville, Ont.

HOISTING MACHINERY

*M. Beatty & Sons, Ltd., Welland, Ont.
 *Northern Crane Works, Limited, Walkerville, Ont.

HOSE, fire

*Canadian Consolidated Rubber Co., Limited, Montreal, Que.

HOSE, half, Imperial

*Kingston Hosiery Co., Ltd., Kingston, Ont.

HOSE, rubber

*Canadian Consolidated Rubber Co., Limited, Montreal, Que.
 *Gutta Percha & Rubber, Limited.

HYDRAULIC PRESSES

*Bawden Machine Co., Limited, Toronto.
 *William R. Perrin, Ltd., Toronto.

ICE CREEPERS

*Parmenter & Bulloch Co., Limited, Gananoque, Ont.

ICE-MAKING MACHINERY

*The Linde Canadian Refrigeration Co., Limited, Montreal, Que.

INCUBATORS & BROODERS

*Lee Mfg. Co., Ltd., Pembroke, Ont.

INJECTORS, automatic and autopsitive

*Penberthy Injector Co., Limited, Windsor, Ont.

INTERLOCKING RUBBER TILING

*Gutta Percha & Rubber Mfg. Co., of Toronto, Limited, Toronto.

INVERTS

*Standard Clay Products, Ltd., St. Johns, Que.

IRON

*Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N.S.

IRON AND STEEL BARS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

IRON, refined bar

*Starr Mfg. Co., Ltd., Dartmouth, N.S.

IRON STAIRWAYS

*Canada Wire & Iron Goods Co., Hamilton, Ont.
 *Dennis Wire & Iron Works Co., London, Ont.

IRONWORK, architectural

*Canada Wire & Iron Goods Co., Hamilton, Ont.

IRONWORK, ornamental

*Canada Wire & Iron Goods Co., Hamilton, Ont.

IRON, LEAD AND PUTTY

*A. R. Whittall, Montreal, Que.

JAM, canned goods, etc.

*E. D. Smith & Son, Limited.

JAPANS, enamels, etc.

*A. Muirhead Co., Ltd., Toronto.

JOINTERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

JELLY POWDER

*S. H. Ewing & Sons, Montreal, Que.

JEWELRY, enamelled souvenir

*Caron Bros., Montreal, Que.

JEWELRY, gold-filled

*Caron Bros., Montreal, Que.

JOIST HANGERS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

KELSEY WARM AIR GENERATOR

The Jas. Smart Mfg. Co., Limited, Brockville, Ont.

KILNS

*Sheldons, Limited, Galt, Ont.

KINDLING

Standard Fuel Co., Toronto.

KNIFE GRINDERS

*W. H. Banfield & Sons, Toronto.

KNITTED GOODS

*Penman's, Limited, Paris, Ont.

KNIVES

Henry Disston and Sons, Toronto.
The Peter Hay Knife Co., Limited, Galt, Ont.
Simonds Canada Saw Co., Limited, Montreal, Que.

KNIVES, pulp and paper

Henry Disston and Sons, Toronto.
The Peter Hay Knife Co., Limited, Galt, Ont.

KODAKS AND PHOTOGRAPHIC SUPPLIES

Canadian Kodak Co., Ltd., Toronto.

LABELS

Lawson & Jones, Ltd., London, Ont.

LABELS, lithographed

Harris Lithographing Co., Toronto.

LACE LEATHER

F. C. McCordick, St. Catharines, Ont.

*Sadler & Haworth, Montreal, Que.

*The D. K. McLaren Belting Co., Limited, Montreal, Que.

*The J. C. McLaren Belting Co., Limited, Montreal, Que.

LADDERS

Stratford Mfg. Co., Ltd., Stratford, Ont.

LADDERS, step.

*Otterville Mfg. Co., Ltd., Otterville, Ont.

LADLES, foundry

*Northern Crane Works, Limited, Walkerville, Ont.

LAGER

E. L. Drewry, Winnipeg, Man.

LARD

F. W. Fearman Co., Ltd., Hamilton, Ont.

LATH

The C. Beck Mfg. Co., Ltd., Penetanguishene, Ont.

LATHE CHUCKS

Ker & Goodwin, Brantford, Ont.

LATHE-DOGS

Canadian Billings & Spencer, Ltd., Welland, Ont.

LAUNCHES

Peterboro Canoe Co., Ltd., Peterboro, Ont.

LAWN MOWERS

Taylor-Forbes Co., Limited, Guelph, Ont.

LAWN SWINGS

Stratford Mfg. Co., Ltd., Stratford, Ont.

LAVATORIES, enameled

Amherst Foundry Co., Limited, Amherst, N.S.

LAUNDRY SINKS

Amherst Foundry Co., Limited, Amherst, N.S.

LEAD

*The Consolidated Mining and Smelting Co. of Canada, Limited, Trail, B.C.

LEAD GRINDERS

Benjamin Moore & Co., Limited, Toronto.

LEAD SHEET

Toronto Plate Glass Importing Co., Limited, Toronto.

LEAD PIPE

*The Steel Co. of Canada, Limited, Hamilton, Ont.

Toronto Plate Glass Importing Co., Limited, Toronto.

*The Canada Metal Co., Toronto.

LEATHER

The Robson Leather Co., Limited, Oshawa, Ont.

LEATHER, bookbinders'

Clarke & Clarke, Ltd., Toronto.

LEATHER, fancy

Clarke & Clarke, Ltd., Toronto.

LEATHER GOODS

Lamontagne, Ltd., Montreal, Que.

LEATHER, hemlock sole

The Breithaupt Leather Co., Ltd., Berlin, Ont.

LEATHER, patent colt and side leather

*A. R. Clarke & Co., Ltd., Toronto.

LEATHER, sheep skin, etc.

Clarke & Clarke, Ltd., Toronto.

LEATHER, upholstering

Clarke & Clarke, Ltd., Toronto.

LEATHER, upper

A. Davis & Son, Ltd., Kingston, Ont.

LINK BELTING

*Canadian Link Belt Co., Toronto.

*The Dodge Mfg. Co., Ltd., Toronto.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

LINOLEUM

Dominion Oil Cloth Co., Limited, Montreal, Que.

LITHOGRAPHED BUSINESS STATIONERY

Business Systems, Ltd., Toronto.

LITHOGRAPHED TIN WARE

*MacDonald Mfg. Co., Limited, Toronto.

LITHOGRAPHERS

American Bank Note Company, Ottawa, Ont.

Harris Lithographing Co., Toronto.

Stone, Limited, Toronto.

Rolph & Clark, Limited, Toronto.

LOCKERS

*Canada Wire & Iron Works Co., Hamilton, Ont.

*Dennis Wire & Iron Works Co., London, Ont.

*Geo. B. Meadows, Wire, Iron and Brass Works Co., Toronto.

LOCOMOTIVE BLOCKS

Standard Clay Products, Limited, St. Johns, Que.

LOCOMOTIVES, industrial

*Montreal Locomotive Works, Ltd., Montreal, Que.

LOCOMOTIVE & MARINE BRASS WORKS

The James Morrison Brass Mfg. Co., Limited, Toronto.

LOOSE LEAF, BINDERS AND FORMS

Business Systems, Ltd., Toronto.

LOOSE LEAF SYSTEMS

Copeland-Chatterson Co., Limited, Brampton, Ont.

LOOSE LEAF SUPPLIES

The Esdale Press, Ltd., Edmonton.

Copeland-Chatterson Co., Limited, Brampton, Ont.

LUBRICATORS, steam sight feed

Penberthy Injector Co., Limited, Windsor, Ont.

LUGS, for silos and water tanks

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

*Otterville Mfg. Co., Ltd., Otterville, Ont.

LUMBER

The C. Beck Mfg. Co., Ltd., Penetanguishene, Ont.

G. & J. Esplen, Montreal, Que.

LUMBER, asbestos

*Eureka Mineral Wool & Asbestos Co., Toronto.

*Lumber, spruce and pine, cedar railway ties and shingles

Bathurst Lumber Co., Ltd., Bathurst, N.B.

LUMBERING BLANKETS

Slingsby Mfg. Co., Ltd., Brantford, Ont.

LUMBER, red pine and spruce

Gillies Bros., Ltd., Braeside, Ont.

LUMBER, spruce, fir, larch and cedar

Fernie Lumber Co., Ltd., Fernie, B.C.

LUMBER, white pine

Gillies Bros., Ltd., Braeside, Ont.

MACHINE TOOLS

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, conveying

*Canadian Link Belt Co., Toronto.

*Canadian Mathews Gravity Carrier Co., Limited, Toronto.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

MACHINERY, flour mill

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

MACHINERY, grinding

*Canadian Hart Wheels, Limited, Hamilton, Ont.

MACHINERY, hoisting, etc.

*Polson Iron Works, Limited, Toronto.

J. & R. Weir, Montreal, Que.

*M. Beatty & Sons, Ltd., Welland, Ont.

*Northern Crane Works, Limited, Walkerville, Ont.

MACHINERY, ice cream

J. J. McLaughlin, Ltd., Toronto.

MACHINERY, iron working

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, pulp mill

*The Watrous Engine Works Co., Limited, Brantford, Ont.

MACHINERY, punching and shearing

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, railroad and car shop

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, roadmaking

Sawyer-Massey Co., Limited, Hamilton, Ont.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

MACHINERY, sawmill

The E. Long Mfg. Co., Limited, Orillia, Ont.

P. Payette & Co., Pentanguishene, Ont.

W. P. Plant, Hastings, Ont.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

*Yates, P. B., Machine Co., Ltd., Hamilton, Ont.

MACHINERY, sheet metal working

Brown, Boggs Co., Ltd., Hamilton, Ont.

MACHINERY, special

Bawden Machine Co., Limited, Toronto.

MACHINERY, tannery

W. P. Plant, Hastings, Ont.

MACHINERY, transmission

*Dodge Mfg. Co., Ltd., Toronto.

*Goldie & McCulloch Co., Limited, Galt, Ont.

MACHINERY, woodworking

*Yates, P. B., Machine Co., Ltd., Hamilton, Ont.

Preston Woodworking Machinery Co., Ltd., Preston.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

MACHINE WRENCHES

*Canadian Billings & Spencer, Ltd., Welland, Ont.

MACHINES, painting

Spramotor Co., London, Ont.

MAGNESITE

Canadian Carbonate Co., Limited, Montreal, Que.

MALT

*Hiram Walker & Sons, Limited, Walkerville, Ont.

MAPLE PRODUCTS

*Maples, Limited, Toronto.

MAPS AND MAP MOUNTING

The Geo. M. Hendry Co., Limited, Toronto.

Stone, Limited, Toronto.

MARTINGALE RINGS AND SLIDE LOOPS

The Arlington Co. of Canada, Ltd., Toronto.

MATCHES

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

MATCHES

*The E. B. Eddy Co., Ltd., Hull.

MECHANICAL STOKERS

*The Jones Underfeed Stoker Co., Ltd., Toronto.

MEDICINES, patented and pharmaceutical

Dr. Ed. Morin & Cie., Ltd., Quebec.

METAL, babbitt

*Canada Metal Co., Toronto.

*Tallman Brass and Metal Co., Hamilton, Ont.

Alonzo W. Spooner, Limited, Port Hope, Ont.

METAL CEILING

*Metallic Roofing Co., Limited, Toronto.

METAL LATH

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

METAL PACKING

*Garlock Packing Company, Hamilton, Ont.

METAL, spinning and stamping

The Booth-Coulter Copper and Brass Co., Limited, Toronto.

METAL SHINGLES

*The Metallic Roofing Co. of Canada, Limited, Toronto.

METAL SIDING

*The Metallic Roofing Co., Ltd., Toronto.

MILK DEALERS' MACHINERY AND SUPPLIES

De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

MILLBOARD, asbestos

*Eureka Mineral Wool & Asbestos Co., Toronto.

MILLING CUTTERS

Pratt and Whitney Company of Canada, Dundas, Ont.

MITTS AND GLOVES (Indian, tan, red deerskins)

Holt, Renfrew Ltd., Quebec, Que.

A. R. Clarke & Co., Ltd., Toronto.

MOCCASINS AND SLIPPERS (Indian tanned leathers)

Holt, Renfrew Ltd., Quebec, Que.

MORTISERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

MOTOR CARS

*Ford Co. of Canada, Ford, Ont.

*Willys-Overland, Ltd., West Toronto.

MOTORS, electric (alternating current)

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

Consolidated Electric Co., Limited, Toronto.

*Jones & Moore Electric Co., Ltd., Toronto.

*Canadian Crocker-Wheeler Co., Ltd., St. Catharines, Ont.

*T. & H. Electric Co., Hamilton.

MOTORS, electric (direct current)

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

Consolidated Electric Co., Limited, Toronto.

*Jones & Moore Electric Co., Ltd., Toronto.

*T. & H. Electric Co., Hamilton.

MOTORS, electric (repairing)

Consolidated Electric Co., Limited, Toronto.

*T. & H. Electric Co., Hamilton.

MOULDERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

NAILS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

NAILS, copper

Parmenter and Bulloch Co., Ltd., Gananoque, Ont.

NAILS, wire

Parmenter and Bulloch Co., Ltd., Gananoque, Ont.

The Graham Nail Works, Toronto.

NAPHTHA

*The Imperial Oil Co., Limited, Toronto.

NICKEL OXIDE

Coniagas Reduction Co., Limited, St. Catharines, Ont.

NUTS

*John Morrow Screw & Nut Co., Limited, Ingersoll, Ont.

*The National Acme Mfg. Co., Montreal, Que.

*The Steel Co. of Canada, Limited, Hamilton, Ont.

OAKUM, plumbers, Canadian Navy

Factory Waste and Metal Co., Montreal, Que.

*Seythes & Co., Ltd., Toronto.

OAT CRUSHERS AND FLAKERS
J. Fleury's Sons, Aurora, Ont.**OFFICE DESKS**

*Goderich Organ Co., Goderich, Ont.

OFFICE EQUIPMENT

*Office Specialty Co., Newmarket, Ont.

OFFICE FURNITURE

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

OILS

Brandram-Henderson, Ltd., Montreal, Que.

A. Ramsay & Son Co., Montreal, Que.

Sherwin-Williams Co. of Canada, Limited, Montreal, Que.

OIL FILTRATION AND CIRCULATING SYSTEMS

S. F. Bowser & Co., Toronto.

OIL STORAGE SYSTEMS, self-measuring

S. F. Bowser & Co., Toronto.

OIL COMPANIES

*Canadian Oil Cos., Toronto.

Commercial Oil Co., Ltd., Hamilton, Ont.

*Imperial Oil Co., Toronto.

OILS (Petroleum products)

*British American Oil Co., Limited, Toronto.

*The Imperial Oil Co., Limited, Toronto.

OILS, road

*Paterson Manufacturing Company, Toronto and Montreal.

OILCLOTHS, floor and table

Dominion Oil Cloth Co., Limited, Montreal, Que.

ORGANS

*Goderich Organ Co., Goderich, Ont.

Karn-Morris Piano and Organ Co., Ltd., Woodstock, Ont.

Thomas Organ & Piano Co., Woodstock, Ont.

ORGANS, pipe

Cassavant Freres, St. Hyacinthe, Que.

Karn-Morris Piano and Organ Co., Ltd., Woodstock, Ont.

ORGANS, parlor

*Goderich Organ Co., Goderich, Ont.

ORNAMENTAL IRON WORK

*Canada Wire & Iron Goods Co., Hamilton, Ont.

*Dennis Wire & Iron Works Co., London, Ont.

*The Geo. B. Meadows, Toronto Iron and Brass Goods Works Co., Limited, Toronto.

OVENS, portable bake

Bedford Stove Co., Bedford, Que.

Mackenzie & Co., Ottawa, Ont.

Peerless Overall Co., Rock Island, Que.

Walker Pant and Shirt Co., Walkerville and Chatham, Ont.

The Standard Shirt Co., Limited, Montreal, Que.

OVERCOATINGS

Rosamond Woollen Co., Almonte, Ont.

OVERHEAD RUNWAYS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

OXY-ACETYLENE WELDING

*L'Air Liquide Society, Montreal.

OXYGEN

*L'Air Liquide Society, Montreal.

PACKING BOXES

Barchard & Co., Limited, Toronto.

PACKING, engine

*Garlock Packing Co., Hamilton.

PACKING, rubber

*Canadian Consolidated Rubber Co., Limited, Montreal, Que.

*Gutta Percha & Rubber, Limited, Jenkins Bros., Ltd., Montreal, Que.

PAISLS AND TUBS, wooden

The C. Beck Mfg. Co., Limited, Penetanguishene, Ont.

PAINTERS' SUPPLIES

A. Muirhead Co., Ltd., Toronto.

PAINTS

R. C. Jamieson & Co., Limited, Montreal, Que.

PAINTS and VARNISHES

A. Muirhead Co., Ltd., Toronto.

Benjamin Moore & Co., Limited, Toronto.

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

The Imperial Varnish & Color Co., Limited, Toronto.

The Staneland Co., Ltd., Victoria, B.C.

A. Ramsay & Sons Co., Montreal, Que.

*The Dougall Varnish Co., Limited, Montreal, Que.

Standard Paint Co. of Canada, Limited, Montreal, Que.

*Toch Bros., Toronto.

*The Dougall Varnish Co., Limited, Montreal, Que.

Standard Paint Co. of Canada, Limited, Montreal, Que.

*Paterson Manufacturing Company, Toronto and Montreal.

*Toch Bros., Toronto.

*Paterson Manufacturing Company, Toronto and Montreal.

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*Toch Bros., Toronto.

PRESES, veneer

*William R. Perrin, Ltd., Toronto.
 *Canadian Boomer & Boschert Press Co., Ltd., Montreal, Que.

PRINTERS

Rous & Mann, Ltd., Toronto.
 R. G. McLean, Toronto.

PRINTERS, catalogue

R. G. McLean, Toronto.

PRINTING AND LITHOGRAPHING

Lawson & Jones, Limited, London, Ont.

PULLEYS

*Dodge Mfg. Co., Ltd., Toronto.
 *The Goldie & McCulloch Co., Ltd., Galt, Ont.

PULP, bleached sulphite

The Edward Partington Pulp and Paper Co., St. John, N.B.

PULP, sulphate and sulphite

Bathurst Lumber Co., Ltd., Bathurst, N.B.

PUMPS

*Bawden Machine Co., Ltd., Toronto.
 *Canadian Fairbanks-Morse Company, Limited, Montreal, Que.
 *Darling Bros., Ltd., Montreal.
 *Ontario Wind Engine & Pump Co., Ltd., Toronto.
 *Smart-Turner Machine Co., Ltd., Hamilton, Ont.
 Spramotor Co., London, Ont.

PUMPS, boiler feed

*Bawden Machine Co., Ltd., Toronto.
 *Smart-Turner Machine Co., Ltd., Hamilton, Ont.
 *The Goldie & McCulloch Co., Ltd., Galt, Ont.

PUMPS, centrifugal

*M. Beatty & Sons, Ltd., Welland, Ont.
 *Smart-Turner Machine Co., Ltd., Hamilton, Ont.
 *Waterous Engine Works Co., Ltd., Brantford, Ont.

PUMPS, iron

*Goold-Shapley-Muir Co., Limited, Brantford, Ont.
 *Smart-Turner Machine Co., Ltd., Hamilton, Ont.
 *Waterous Engine Works Co., Ltd., Brantford, Ont.

PUMPS, turbine and reciprocating

*Bawden Machine Co., Ltd., Toronto.
 *Smart-Turner Machine Co., Ltd., Hamilton, Ont.
 John McDougall, Caledonian Iron Works Co., Ltd., Montreal, Que.

PUNCHES

*Pratt & Whitney Co., Dundas.

PYROMETERS

*Canadian Hoskins Co., Walkerville, Ont.

RADIATORS

Taylor-Forbes Co., Limited, Guelph, Ont.
 Warden King, Ltd., Montreal, Que.

RAILINGS, brass and iron

*Dennis Wire & Iron Works Co., London, Ont.

RAILWAY SIGNAL APPLIANCES

General Railway Signal Co. of Canada, Ltd., Montreal, Que.

RAILWAY SUPPLIES

*Canadian Steel Foundries, Ltd., Montreal, Que.
 *Chicago Bridge & Iron Works, Bridgeburg, Ont.
 B. J. Coghlin Co., Ltd., Montreal, Que.

RAILWAY TARIFF BINDERS

The Esdale Press Ltd., Edmonton.

READY-TO-WEAR GARMENTS, LADIES'

H. C. Boulter Co., Ltd., Toronto.

REAMERS

*Pratt & Whitney Co., Dundas.
 *Butterfield & Co., Rock Island, P.Q.

"REDWOOD" lager

E. L. Drewry, Winnipeg, Man.

REED AND RATTAN GOODS

Canada Furniture Mfgs., Limited, Woodstock, Ont.

REFRIGERATORS

Sanderson-Harold Co., Ltd., Paris, Ont.
 Lee Mfg. Co., Ltd., Pembroke, Ont.

REFRIGERATING MACHINERY

The Linde Canadian Refrigeration Co., Ltd., Montreal, Que.

REFRIGERATORS, store, homes and institutions

Ham & Nott Co., Ltd., Brantford, Ont.
 John Hillock & Co., Ltd., Toronto.

REINFORCEMENT BARS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

REINFORCEMENT FOR CONCRETE

*Canada Wire & Iron Goods Co., Hamilton, Ont.
 *Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

REVOLVING DOORS

*A. B. Ormsby Co., Ltd., Toronto.

RINGS, gold

Caron Bros., Montreal, Que.

RIVETS

*Canadian Tube & Iron Co., Ltd.,
 *The Steel Co. of Canada, Limited, Hamilton, Ont.

RIVETS, bifurcated and tubular

Parmenter & Bulloch Co., Limited, Gananoque, Ont.

RIVETS AND BURRS, iron, copper and brass

Parmenter & Bulloch Co., Limited, Gananoque, Ont.

ROLLERS, shade

Daly & Morin, Montreal, Que.

ROOFING, metal

*Metallic Roofing Co., Limited, Toronto.

ROOFING, ready to lay

Standard Paint Co. of Canada, Ltd., Montreal, Que.
 *Paterson Mfg. Co., Toronto and Montreal.

ROOF TRUSSES

*The Canadian Bridge Co., Ltd., Walkerville, Ont.
 *Dominion Bridge Co., Ltd., Montreal, Que.

ROPE

*Doon Twines Ltd., Doon, Ont.
 *Shurly & Derrett, Ltd., Toronto.

ROPE, cotton

Hamilton Cotton Co., Hamilton, Ont.

RUBBER FOOTWEAR

Ames Holden, McCready, Limited, Montreal, Que.
 *Gutta Percha & Rubber, Ltd.
 The Miner Rubber Co., Limited, Granby, Que.

RUBBER GOODS

*Canadian Consolidated Rubber Co., Limited, Montreal, Que.
 *Gutta Percha & Rubber, Ltd.

RUBBER MOULDS

Bawden Machine Co., Ltd., Toronto.

RUBBER PACKING

*Garlock Packing Company, Hamilton, Ont.

RULES

The Lufkin Rule Co. of Canada, Ltd., Windsor, Ont.

RYE

The St. Hyacinthe Distillery Co., Ltd., St. Hyacinthe, Que.

SADDLERY HARDWARE

*Dominion Forge and Stamping Co., Walkerville, Ont.

SAFES

*Goldie & McCulloch Co., Limited, Galt, Ont.

SAMPLE CASES

The M. Langmuir Mfg. Co. of Toronto, Ltd., Toronto.
 J. Eveleigh & Co., Ltd., Montreal, Que.

SANDERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

SANDPAPER

*Delany and Pettit, Ltd., Toronto.

SASH CORD, cotton

Hamilton Cotton Co., Hamilton, Ont.

SALT

Canadian Salt Co., Ltd., Windsor, Ont.
 The Dominion Salt Co., Limited, Sarnia, Ont.

SANITARY PAPER TOWELS

*E. B. Eddy Co., Ltd., Hull, Que.

SAW SHARPENING MACHINERY

*Canadian Hart Wheels, Limited, Hamilton, Ont.

SAWS

Henry Disston & Sons, Limited, Toronto.
 Shurly & Deitrich, Galt, Ont.

SAWS, crosscut and band

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.
 Shurly & Deitrich, Galt, Ont.

SAWS, circular mill

Shurly & Deitrich, Galt, Ont.

SAWS, hack

*Victor Saw Works, Ltd., Hamilton, Ont.

SAWS, of all kinds

Simonds Canada Saw Co., Limited, Montreal, Que.

SAWS, rip

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.
 Shurly & Deitrich, Galt, Ont.

SAWMILLS

G. & J. Esplen, Montreal, Que.
 *The Waterous Engine Works Co., Ltd., Brantford, Ont.

SAWS, specialties

*Victor Saw Works, Ltd., Hamilton, Ont.

SCALES

The Gurney Scale Co., Hamilton, Ont.

SCALES, counter

The Gurney Scale Co., Hamilton, Ont.

SCALES, railway track, etc.

The Gurney Scale Co., Hamilton, Ont.

SCREENS

*Canada Wire & Iron Goods Co., Hamilton, Ont.

SCREEN DOORS AND WINDOWS

Sanderson-Harold Co., Ltd., Paris, Ont.
 Ham & Nott Co., Ltd., Brantford, Ont.

SCREWS

*John Morrow Screw & Nut Co., Ltd., Ingersoll, Ont.
 *The National Acme Mfg. Co., Montreal, Que.
 *The Steel Co. of Canada, Limited, Hamilton, Ont.

SCREW PLATES

*Butterfield & Co., Rock Island, P.Q.

SECURITIES, engraved

American Bank Note Co., Ottawa, Ont.

SERGES

Rosamond Woollen Co., Almonte, Ont.

SHAFTING

Canada Forge Co., Ltd., Welland, Ont.
 *Canadian Drawn Steel Co., Ltd., Hamilton, Ont.
 *The Goldie & McCulloch Co., Ltd., Galt, Ont.
 *Union Drawn Steel Co., Limited, Hamilton, Ont.
 *Dodge Mfg. Co., Ltd., Toronto.

SHANTY BLANKETS

Slingsby Mfg. Co., Ltd., Brantford, Ont.

SHAPERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

SHEAR BLADES, iron

The Peter Hay Knife Co., Limited, Galt, Ont.

SHEATHING

*Paterson Mfg. Co., Toronto and Montreal.

SHEATHING, asbestos corrugated

*Eureka Mineral Wool & Asbestos Co., Toronto.

SHEET METAL STAMPINGS

Acme Stamping & Tool Works, Ltd., Hamilton, Ont.

SHINGLES

Bathurst Lumber Co., Ltd., Bathurst, N.B.

SHIRTS

MacKenzie & Co., Ottawa, Ont.
 John W. Peck & Co., Ltd., Montreal, Que.

SHEETS, galvanized

*Dominion Sheet Metal Co., Ltd., Hamilton.

SHIRTS, workmen's

*A. R. Clarke & Co., Ltd., Toronto.

SHOE PEGWOOD

O. Chalifour, Quebec, Que.

SHOE LININGS

Galt Knitting Co., Ltd., Galt, Ont.

SHOES, running and athletic

Ames-Holden-McCready, Ltd., Montreal, Que.

SHOOKS

Barchard & Co., Ltd., Montreal, Que.

SILVER BULLION

Coniagas Reduction Co., Ltd., St. Catharines, Ont.

SILVERSMITH

Canadian Wm. A. Rogers, Ltd., Toronto.
 Standard Silver Co., Toronto.

SILVERWARE, sterling

Roden Bros., Limited, Toronto.

SINKS, enamelled

Amherst Foundry Co., Limited, Amherst, N.S.

SKATES, figure

Canada Cycle and Motor Co., Ltd., Toronto.

SKATES, genuine Acme

Canada Cycle and Motor Co., Ltd., Toronto.

SKATES, hockey

Canada Cycle and Motor Co., Ltd., Toronto.

SKATES, ice

Canada Cycle and Motor Co., Ltd., Toronto.

SKIFFS

Peterboro Canoe Co., Ltd., Peterboro, Ont.

SKYLIGHTS

*A. B. Ormsby Co., Ltd., Toronto.
 *Metallic Roofing Co., Limited, Toronto.

SLEIGHTS

Tudhope-Anderson Co., Limited, Orillia, Ont.

SLIPPERS

Ames-Holden-McCready, Ltd., Montreal, Que.

SMOKE CONSUMERS

*The Jones Underfeed Stoker Co., Ltd., Toronto.

SOAPS

J. Barsalou & Co., Ltd., Montreal, Que.

SOAP (soft, oil)

The Imperial Varnish & Color Co., Ltd., Toronto.
 Sherwin-Williams Co. of Canada, Limited, Montreal, Que.

SODA WATER FOUNTAINS

J. J. McLaughlin, Ltd., Toronto.

SOIL PIPE

Anthes Foundry, Ltd., Toronto.

SOLDER

Alonzo W. Spooner, Ltd., Port Hope, Ont.
 *Canada Metal Co., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.

SOLDER, silver

Geo. H. Lees & Co., Hamilton.

SOLDER, wire and bar

*American Can Co., Montreal, and Hamilton.

SOLDERING IRONS AND COPPERS

Brown, Boggs Co., Ltd., Hamilton, Ont.

SNOWSHOES

Holt, Renfrew, Ltd., Quebec, Que.

SPARK PLUGS

Canadian Carbon Co., Limited, Toronto.

SPIRAL CONVEYORS

*Canadian Mathews Gravity Carrier Co., Ltd., Toronto.
 *The Goldie & McCulloch Co., Ltd., Galt, Ont.

SPLIT PEAS

H. Murton, Guelph, Ont.

SPIKES, railway and marine

Starr Mfg. Co., Ltd., Dartmouth, N.S.

SPIRITS

The St. Hyacinthe Distillery Co., Ltd., St. Hyacinthe, Que.

*Hiram Walker & Sons, Limited, Walkerville, Ont.

SPORTING MEDALS AND TROPHIES

Roden Bros., Limited, Toronto.

SPRAYERS

Spramotor Co., London, Ont.

SPRING COTTERS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

SPRINGS

*Canadian Steel Foundries, Ltd., Montreal, Que.

B. J. Coghlin Co., Ltd., Montreal, Que.

Guelph Spring & Axle Co., Ltd., Guelph, Ont.

SPRINGS, carriage and automobile

Guelph Spring and Axle Co., Ltd., Guelph, Ont.

SPRINKLER SYSTEMS

*Chicago Bridge & Iron Works, Bridgeburg, Ont.

*General Fire Equipment Co., Ltd., Toronto.

*Purdy, Mansell, Ltd., Toronto.

*Vogel Co. of Canada, Ltd., Montreal, Que.

SPROCKETS, gray iron and flint rim

*Canadian Link Belt Co., Toronto.

STAINS

R. C. Jamieson & Co., Ltd., Montreal, Que.

STAINS, creosote shingle

A. Muirhead Co., Ltd., Toronto.

STAMPINGS

*Dominion Forge and Stamping Co., Ltd., Walkerville, Ont.

STAMPS, steel, brass and rubber

Pritchard-Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

STAMP MILLS

*Jenckes Machine Co., Sherbrooke.

STATIONERY, office

Harris Lithographing Co., Toronto.

STEAM PIPE and BOILER COVERINGS, asbestos

*Eureka Mineral Wool & Asbestos Co., Toronto.

STEAM SHOVELS

*M. Beatty & Sons, Ltd., Welland, Ont.

STEAM SPECIALTIES

*C. A. Dunham Co., Ltd., Toronto.

*Darling Bros., Ltd., Montreal.

*Sheldons, Ltd., Galt.

STEAM TRAPS

*C. A. Dunham Co., Ltd., Toronto.

*Canadian Morehead Manufacturing Co., Limited, Woodstock.

STEEL

*Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N.S.

STEEL BILLETS and BLOOMS

*The Steel Company of Canada, Limited, Hamilton.

STEEL BUILDINGS

*The Canadian Bridge Co., Ltd., Walkerville, Ont.

*Dominion Bridge Co., Ltd., Montreal.

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

STEEL CASTINGS

*Canadian Steel Foundries, Ltd., Montreal, Que.

*Dominion Steel Foundry Co., Ltd., Hamilton.

*Joliette Steel Co., Ltd., Montreal.

STEEL FILING EQUIPMENT

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

STEEL PEN STOCKS

*Jenckes Machine Co., Sherbrooke.

STEEL RODS

*The Steel Co. of Canada, Ltd., Hamilton.

STEEL SASH

*Dennis Wire & Iron Works Co., London.

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

STEEL SHELVEING

*Dennis Wire & Iron Works Co., London.

STEEL WIRE RODS

*The Steel Company of Canada, Limited, Hamilton.

TELEPHONE ACCESSORIES

*Northern Electric Co., Limited, Montreal.

STENCILS, brass

Pritchard-Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

STEREOTYPING

Central Press Agency, Toronto

STOKERS

*The Jones Underfeed Stoker Co., Ltd., Toronto.

STOOLS AND BENCHES, piano and organ

*Otterville Mfg. Co., Ltd., Otterville, Ont.

STONE

The Corinthian Stone Co., Guelph, Ont.

The Hagersville Contracting Co., Hagersville, Ont.

STORE FITTINGS

The Canadian Office & School Furniture Co., Ltd., Preston, Ont.

STOVES

Tudhope-Anderson Co., Limited, Orillia, Ont.

Bedford Stove Co., Bedford, Que.

STOVE LININGS

Standard Clay Products, Ltd., St. Johns, Que.

STOVES AND RANGES

Bedford Stove Co., Bedford, Que.

Lee Mfg. Co., Ltd., Pembroke, Ont.

The Jas. Smart Mfg. Co., Ltd., Brockville, Ont.

McClary Mfg. Co., London, Ont.

STRETCHERS, lace curtain

*Otterville Mfg. Co., Ltd., Otterville, Ont.

STRUCTURAL STEEL

*Dominion Bridge Co., Montreal.

*Hamilton Bridge Works Co., Ltd., Hamilton.

*McKinnon Holmes & Co., Sherbrooke, P.Q.

*The Canadian Bridge Co., Ltd., Walkerville, Ont.

*The Structural Steel Co., Ltd., Montreal.

SUIT CASES

J. Eveleigh & Co., Ltd., Montreal.

The M. Langmuir Mfg. Co. of Toronto, Ltd., Toronto.

SURFACERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

SWITCHES, railway

Canadian Ramapo Iron Works, Ltd., Niagara Falls, Ont.

SWITCHES AND FROGS

*Canadian Steel Foundries, Ltd., Montreal, Que.

SWITCH STANDS

Canadian Ramapo Iron Works, Ltd., Niagara Falls, Ont.

TABLE COVERS, chenille

Hamilton Cotton Co., Hamilton, Ont.

TANKS

*Chicago Bridge & Iron Works, Bridgeburg, Ont.

Goold-Shapley-Muir Co., Ltd., Brantford, Ont.

*McKinnon Holmes & Co., Sherbrooke, P.Q.

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

*The Goldie & McCullough Co., Ltd., Galt.

*The Watrous Engine Works Co., Ltd., Brantford.

TANNERS' SUPPLIES

McClary Mfg. Co., London, Ont.

TAPS

*Butterfield & Co., Rock Island, P.Q.

*Pratt & Whitney Co., Dundas.

TAPES, measuring

The Lufkin Rule Co., of Canada, Ltd., Windsor, Ont.

TAPES, paper and cloth, gummed and ungummed

Gummed Papers, Ltd., Brampton.

TELEPHONE ACCESSORIES

*Canadian Independent Telephone Co., Toronto.

*Northern Electric Co., Limited, Montreal, Que.

TENTS

Mackenzie & Co., Ottawa, Canada.

Turner, J. J., & Sons, Peterboro, Ont.

*Scythes & Co., Ltd., Toronto.

TERRA ALBA

*Albert Mfg. Co., Hillsborough, N.B.

TERRA COTTA (architectural)

Toronto Plate Glass Importing Co., Ltd., Toronto.

TEXTILE SUPPLIES (shuttles, bobbins, spools and picker sticks.)

The Lachute Shuttle Co., Limited, Lachute Mills, P.Q.

THUMB SCREWS

*Canadian Billings & Spencer, Ltd., Welland.

TILING, interlocking rubber

Dunlop Tire & Rubber Goods Co., Ltd., Toronto.

*Gutta Percha & Rubber, Ltd.

TIME RECORDERS

*International Time Recording Co. of Canada, Ltd., Toronto.

TIRES, cycle, auto and truck

Dunlop Tire & Rubber Goods Co., Ltd., Toronto.

*Gutta Percha & Rubber, Ltd.

TRADE MARKS AND DESIGNS

Rideout & Maybee, Toronto.

TRAPS

*C. A. Dunham Co., Ltd., Toronto.

*Canadian Morehead Mfg. Co., Woodstock.

TRANSFORMERS

*The Canadian Crocker-Wheeler Co., Limited, St. Catharines.

TOOLS, track

B. J. Coghlin Co., Ltd., Hamilton, Ont.

TOOLS, sheet metal workers'

Brown, Boggs Co., Ltd., Hamilton, Ont.

TRANSLATIONS INTO FRENCH

Raoul Renault, Quebec City.

TRANSMISSION MACHINERY

*Canadian Link Belt Co., Toronto.

*Dodge Mfg. Co., Ltd., Toronto.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

*The Watrous Engine Works Co., Ltd., Brantford.

TROLLEYS

*Richard-Wilcox Canadian Co., Limited, London, Ont.

*Northern Crane Works, Limited, Walkerville.

TRUCKS, brick, tile and lumber

*Watrous Engine Works Co., Ltd., Brantford.

TRUCKS, motor

*National Steel Car Co., Limited, Hamilton.

TRUCKS, warehouse and factory

The W. S. Mahaffy Co., Toronto.

TRUCKS FOR OFFICE AND VAULT USE

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

TRUNKS

Lamontagne Ltd., Montreal, Que.

J. Eveleigh & Co., Ltd., Montreal, Que.

The M. Langmuir Mfg. Co. of Toronto, Ltd., Toronto.

TUBING, brass and copper

*Booth-Coulter Copper & Brass Co., Ltd., Toronto.

Canadian Seamless Wire Co., Toronto.

*Tallman Brass and Metal Co., Hamilton, Ont.

TUBING, gold and silver

Canadian Seamless Wire Co., Toronto.

TUMBLERS, foundry

*Northern Crane Works, Limited, Walkerville.

*Smart-Turner Machine Co., Ltd., Hamilton, Ont.

TURBINES, steam

*The Canadian Crocker-Wheeler Co., Limited, St. Catharines.

TWEEDS

Rosamond Woollen Co., Almonte, Ont.

TWINES

*Doon Twines Ltd., Doon, Ont.

*Shurly & Derrett, Ltd., Toronto.

TWINES, binder

Brantford Cordage Co., Ltd., Brantford, Ont.

TWINES, cotton

Hamilton Cotton Co., Hamilton, Ont.

TWIST DRILLS

*John Morrow Screw and Nut Co., Ltd., Ingersoll.

*Pratt & Whitney Co., of Canada, Dundas, Ont.

*The Wilt Twist Drill Co., Ltd., Walkerville, Ont.

UNDERWEAR

Galt Knitting Co., Ltd., Galt, Ont.

UNDERWEAR, imperial

Kingston Hosiery Co., Ltd., Kingston, Ont.

UNIONS

*Dart Union Co., Ltd., Toronto, Ont.

*Otterville Mfg. Co., Ltd., Otterville, Ont.

UPHOLSTERED FURNITURE, leather and tapestries

Imperial Rattan Co., Ltd.

VALVES

*Kerr Engine Co., Ltd., Walkerville.

VALVES, for steam and water

Jenkins Bros., Ltd., Montreal, Que.

VALVES, regrounding globe, angle, cross checks, swing checks, etc.

Penberthy Injector Co., Ltd., Windsor, Ont.

VARNISHES

*Ault & Wiborg Co. of Canada, Ltd., Toronto.

Berry Bros., Walkerville, Ont.

*Dougall Varnish Co., Ltd., Montreal.

R. C. Jamieson & Co., Ltd., Montreal, Que.

VAULT FITTINGS, steel

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

VAULTS AND VAULT DOORS

*The Goldie & McCulloch Co., Ltd., Galt.

VENTILATING APPLIANCES

*Sheldons, Ltd., Galt.

VENTILATING SYSTEMS

Gurney Foundry Co., Ltd., Toronto.

VENTILATORS

*A. B. Ormsby, Ltd., Toronto.

*The Metallic Roofing Co. of Canada, Ltd., Toronto, Ont.

VINEGAR

The St. Hyacinthe Distillery Co., Ltd., St. Hyacinthe, Que.

WAGONS

Tudhope-Anderson Co., Ltd., Orillia, Ont.

WALL COPING

Standard Clay Products, Ltd., St. Johns, Que.

WASHERS

*The Steel Company of Canada, Limited, Hamilton.

WASHERS, plate or wrought

London Rolling Mill Co., Ltd., London, Ont.

WASTES, wool and cotton

Factory Waste and Metal Co., Montreal, Que.

*Scythes & Co., Ltd., Toronto.

WATERPROOF CEMENT COATING

Benjamin Moore & Co., Ltd., Toronto.

*Paterson Manufacturing Company, Toronto and Montreal.

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

WEBBING, elastic
Hamilton Cotton Co., Hamilton, Ont.

WEBBING, non-elastic
Hamilton Cotton Co., Hamilton, Ont.

WELL-DIGGING TOOLS AND MACHINERY
*Ontario Wind Engine & Pump Co., Ltd., Toronto.

WHEELS
*Canadian Car & Foundry Co., Ltd., Montreal, Que

Wheels, corundum
*Canadian Hart Wheels, Ltd., Hamilton, Ont.

WHEELS, emery
*Canadian Hart Wheels, Ltd., Hamilton, Ont.

WHEELS, propeller, iron and steel
*Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.

WHEELS, turbine, water
*Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.

WHEELS, water (impulse type)
John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.

WELL DRILLING TOOLS AND MACHINERY
Oil Well Supply Co., Ltd., Petrolia, Ont.

WHIPS AND LASHES
Lay Whip Co., Rock Island, Que.

WHISKY
*Hiram Walker & Sons, Ltd., Walkerville, Ont.

WHITE ARSENIC
Coniagas Reduction Co., Ltd., St. Catharines, Ont

WHITE LEAD
Brandram-Henderson, Ltd., Montreal, Que.
A. Ramsay & Son Co., Montreal, Que.

WINDMILLS
*Goold-Shapley-Muir Co., Limited, Brantford, Ont.
*Ontario Wind Engine & Pump Co., Ltd., Toronto.

WINDOW SHADES
Daly & Morin, Montreal, Que.

WIRE
*The Steel Company of Canada, Limited, Hamilton.
*Eugene F. Phillips, Electrical Works, Ltd., Montreal.
The Graham Nail Works, Toronto.

WIRE CLOTH
*Canada Wire & Iron Goods Co., Hamilton.
C. H. Johnston & Sons, Ltd., Montreal, Que.

WIRE, feeder and trolley
*Eugene F. Phillips, Electrical Works, Ltd., Montreal.

WIRED GLASS
*Metallic Roofing Co., Ltd., Toronto.

WIRE GUARDS
*Canada Wire & Iron Goods Co., Hamilton.
C. H. Johnston & Sons, Ltd., Montreal, Que.

WIRE, insulated electric
*Northern Electric Co., Limited, Montreal.
*Eugene F. Phillips, Electrical Works, Ltd., Montreal.

WIRE ROPE
The Dominion Wire Rope Co., Ltd., Montreal.
*The B. Greening Wire Co., Ltd., Hamilton.

WIRE, weatherproof
*Northern Electric Co., Limited, Montreal.
*Eugene F. Phillips, Electrical Works, Ltd., Montreal.

WIRE WORK
C. H. Johnston & Sons, Ltd., Montreal, Que.
*Canada Wire & Iron Goods Co., Hamilton.
*The Geo. B. Meadows, Toronto, Iron and Brass Goods Works Co., Ltd., Toronto.

WOOD
Standard Fuel Co., Toronto.

WOOD PRINTERS
Barchard & Co., Ltd., Toronto.

WOOD PULP, mechanical
La Cie de Pulpe de Chicoutimi, Chicoutimi, Que.

WOOD SPLIT PULLEYS
*Dodge Mfg. Co., Ltd., Toronto.
*The Goldie & McCulloch Co., Ltd., Galt, Ont.

WOOL
*H. V. Andrews, Toronto.

WORSTED COATINGS AND SUITINGS
Rosamond Woollen Co., Almonte, Ont.

WEAPPERS, book, bottle, etc.
*The Thompson & Norris Co., of Canada, Ltd., Niagara Falls, Ont.

WROUGHT IRON PIPE
*The Steel Company of Canada, Ltd., Hamilton.

WROUGHT PIPE
*The Steel Company of Canada, Ltd., Hamilton.

YARNS, cotton
Hamilton Cotton Co., Hamilton, Ont.

ZINC, electrical
*The Canada Metal Co., Toronto.

* For Display Advertisement see Index, Page 863

ARE YOUR STEAM PIPES INSULATED? IF NOT YOU ARE BURNING MONEY

A GOOD Covering pays for itself in one Season, and is a revenue producer indefinitely.
The Best is the Cheapest. **WE HAVE IT.**

EUREKA MINERAL WOOL & ASBESTOS COMPANY
118 ADELAIDE STREET WEST, TORONTO, ONTARIO

THE BOOTH-COULTER COPPER & BRASS COMPANY, LTD.

SHEETS TUBES COPPER & BRASS AND RODS

SPECIAL SIZES CUT TO ORDER FROM LARGE STOCK—PROMPT SHIPMENT
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SOLICITORS FOR THE CANADIAN MANUFACTURERS' ASSOCIATION

Offices—Toronto General Trusts Building
59 Yonge Street

TORONTO
Canada

INDUSTRIAL CANADA



Greeting :

Permit us to wish every member of the Canadian Manufacturers' Association, a Prosperous Year.

We have reason to be thankful for the business we enjoyed in 1916. We shall endeavor, this year, to be worthy of increased prosperity.

J. J. GIBBONS, LIMITED

General Advertising Agents

MONTREAL
Cables—Gibjay, Toronto

TORONTO

WINNIPEG
Codes—ABC, 5th Edition

**PUBLISHED BY THE CANADIAN
MANUFACTURERS ASSOCIATION** INCORPORATED.
HEAD OFFICE BRANCH OFFICES,
• TORONTO • MONTREAL, HAMILTON, WINNIPEG, VANCOUVER, HALIFAX, QUEBEC.

STEEL BARS

ROUNDS, SQUARES, FLATS, ANGLES AND SPECIAL
SECTIONS FOR AGRICULTURAL IMPLEMENTS

Prompt Shipment from Stock

BURLINGTON STEEL CO., Ltd.

HAMILTON - CANADA

AUTOMOBILE PARTS
DROP FORGINGS



We have erected and are now operating

THE LARGEST COMMERCIAL DROP FORGE PLANT IN CANADA

We are equipped to handle large forging contracts.
This expansion also increases our stamping facilities.
We stand by our Motto: Quality and Service.

SHEET METAL WORK
GENERAL STAMPINGS

DOMINION FORGE & STAMPING CO., LIMITED
Walkerville - Ontario

"PEERLESS" GASOLENE

Superior quality, differs from all others, gives greatest mileage. Sold in Tank Cars, Drums and Barrels, also by Tank Wagon.

BRITISH MOTOR GASOLENE

Not equal to Peerless in volatility or staying powers, but so good that many customers never ask for better. Sold in Tank Cars, Drums and Barrels, also by Tank Wagon.

FORD MOTOR OIL

A Lubricant perfect in all its requirements for use in all Ford Cars. Sold in Barrels, ½ Barrels, Cans and Tins. Special Lithographed Tins made to go under seat of Cars.

"AUTOLENE"

Very highest quality non-carbonizing, cold-proof Motor Oil, made in light, medium and heavy grades for all cars. Sold in Barrels, ½ Barrels, Cans and Lithographed Tins.

VULCAN BENZINE

Sold in Tank Cars and Barrels.

LAMP OILS

"Venango Special," "Electrolene," "Lampolene," and "Petrolene." All these burning oils are of great merit. Sold in Tank Cars and Barrels (Car Loads or Less), also by Tank Wagon.

VULCAN LUBRICATING OILS

Cylinder, Engine, Machine, Dynamo, etc., for all makes of Motors, Steam and Electric plants. Sold in Tank Cars, Barrels, ½ Barrels, Cans and Lithographed Tins.

VULCAN GREASES

For all purposes. Sold in Barrels, ½ Barrels, and Lithographed Pails and Tins.

BRITISH METAL POLISH

Sold in Cans and Lithographed Tins, all sizes.

VULCAN ASPHALTIC ROAD OILS

Eminently satisfactory. In three grades. Sold in Tank Cars and Barrels.

FUEL OIL, PARAFFINE WAX,
PETROLEUM COKE, Etc.

THE BRITISH AMERICAN OIL CO., LIMITED

Refiners: Foot of Cherry Street, Toronto

HEAD OFFICE: ROYAL BANK BUILDING, TORONTO

BRANCHES: MONTREAL

OTTAWA

LONDON

WINDSOR, Etc.

Right Now Write Down "Dart Union Pipe Couplings"

Just to fix it in your mind, for
they are the Unions that give
a return of 200 cents on the dollar.

YOUR JOBBER SELLS THEM

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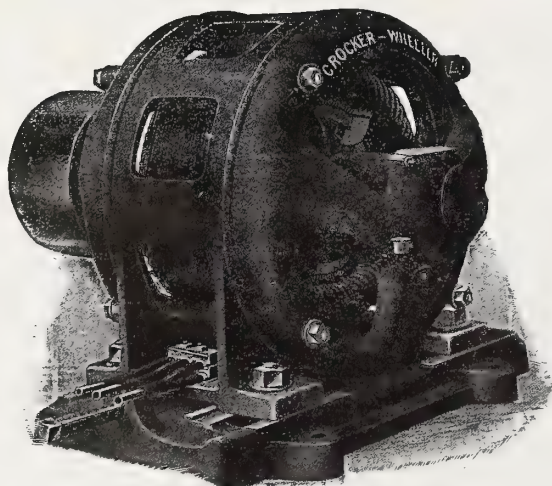
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THE DESIGN OF CROCKER-WHEELER INDUCTION MOTORS

INCLUDES:

Heavy Shafts

Large Journals

High Power Factor

Excellent Efficiency

They have many other desirable features;
Bulletin 155 describes them.

THE CANADIAN CROCKER-WHEELER CO., Limited

MANUFACTURERS AND ELECTRICAL ENGINEERS

Head Office and Works: St. Catharines

District Offices: Montreal, Toronto, Vancouver

**The
Help
You
Need
!**



A PRESTO-PHONE DESK SET

Here's the System

for the executive who feels the need of the best and quickest means of communication between himself and every department of the factory. It is the

PRESTO-PHONE

"Made in Canada"

By the practical test of every-day use, it is unequalled in efficiency of service. It is entirely automatic. No central operator needed. It brings the remotest corner of your plant practically at your "finger ends." No fuss or delay. Instant communication and continuous service at all times furnish the secret of its great success. The Presto-Phone was invented and is manufactured right here in Canada—a Canadian system for Canadian factories.

Booklet Mailed on Request

Canadian Independent Telephone Co., Limited

263 Adelaide St. West

TORONTO



Winnipeg Union Depot, Winnipeg, Man.
Dunham System of Heating installed.

700 Dunham Radiator Traps

were installed in this splendid building last winter to make a satisfactory, comfort-producing Heating System.

The building was erected three or four years ago, and the heating system proved inefficient and unsatisfactory. The change to

The DUNHAM
VACUUM HEATING SYSTEM

was made during the most severe weather (when an outside thermometer registered 40° below zero), and as fast as the Dunham Traps were applied to the return of each radiator, just that quickly did trouble and the inefficient system give way to a satisfactory and econ-

omical system. Scarcely any inconvenience was caused by the change being made during the Heating Season.

Your Heating trouble may not be so large a problem as this; it may be greater. Whatever its character we stand ready to offer you service to correct it.

Will be glad to send Bulletin Catalog or full information.

C. A. DUNHAM CO., Limited, Toronto, Canada

OTTAWA—214 Booth Building
MONTREAL—Room 20, 11 St. Sacramento Street

HALIFAX—McCurdy Building
VANCOUVER—520 Duncan Building

WINNIPEG—405 Tribune Building

ADJUSTABLE TAPS

FOR **Shrapnel and
H.E. Shells**



ON hard, tough shell steel, solid taps are too expensive as the excessive wear quickly puts them below gauge size.

The simple adjustment on the tap, shown in our cut, was gotten out to overcome the effect of this excessive wear and to provide an economical substitute for the expensive chaser tap.

The accuracy to size and form is easily maintained and the life of the tool prolonged far beyond that of a solid tap at a comparatively small advance in price.

We can supply them for all tapping operations on Shrapnel and H.E. shells to 4.5" diameter.

Ask for our list and prices of Shell Tools
Reamers, Taps, Dies, Cutters

If you have not received our No. 8 catalogue yet, we have one for you.

PRATT & WHITNEY CO.
of Canada, Limited
Dundas : Ontario

MONTREAL
723 Drummond Bldg.

WINNIPEG
1205 McArthur Bldg.

VANCOUVER
609 Bank of Ottawa Bldg.



LATHES and Attachments

for the manufacture of—

This Equipment is
all New, Modern
and Heavy

Write or wire our
nearest office for
particulars

EARLY DELIVERY

6", 8"
and
9.2
HIGH
EXPLOSIVE
SHELLS

**THE JOHN BERTRAM & SONS CO.
LIMITED**

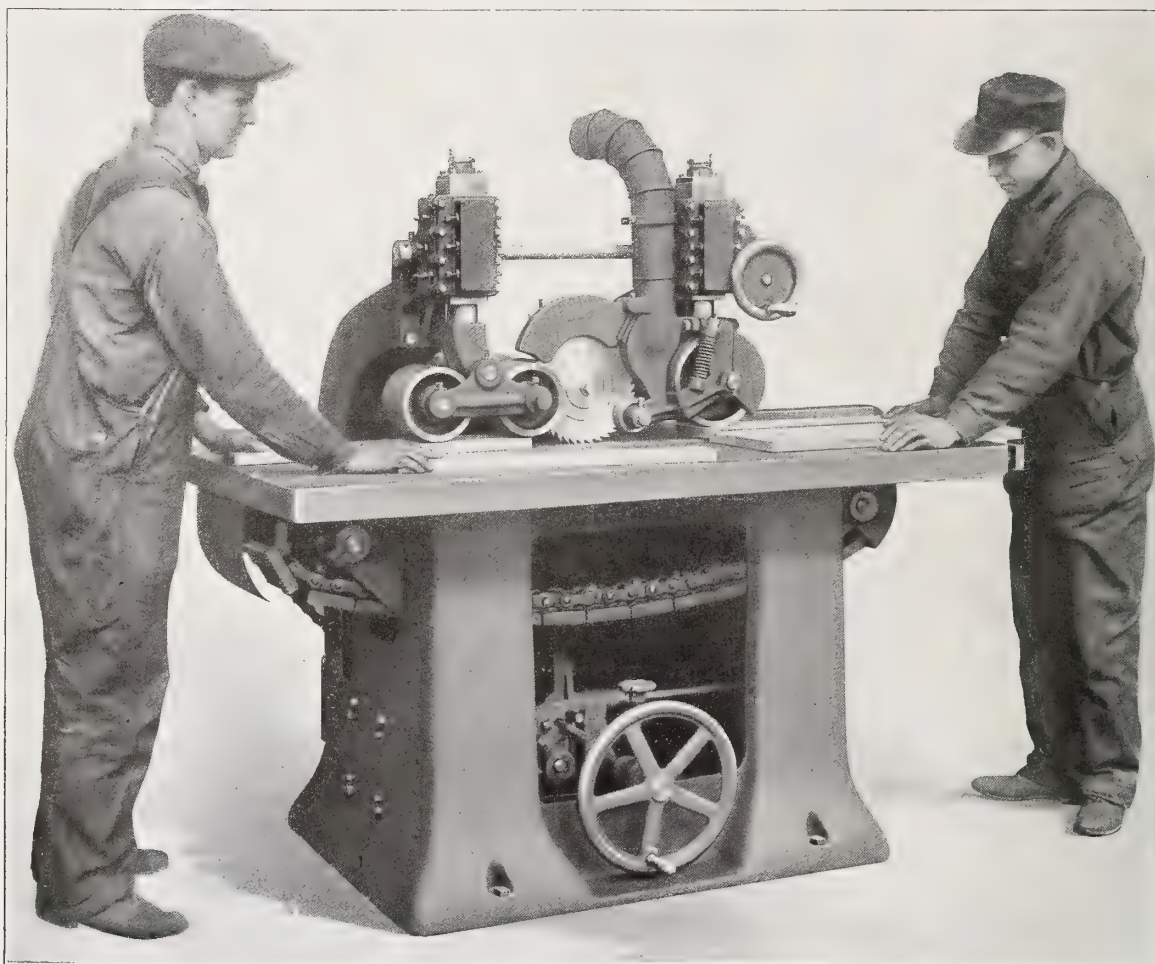
DUNDAS, ONTARIO, CANADA

MONTREAL
723 Drummond Bldg.

VANCOUVER
609 Bank of Ottawa Bldg.

WINNIPEG
1205 McArthur Bldg.





MAKE GOOD BOARDS FROM BAD ONES

The Type G-2 effects surprising economies in working up "mill run" or poor grades of stock. This stuff contains so many ragged or wane edges, knot holes, decayed or shaky spots, checks and cracks that most of it has been discarded because there was no economical way to get out the good lumber. This New Yates Ripping Saw, enabling the operator to cut a straight line anywhere in the board without a guide, solves the problem.



Type G-2 Ripping Saw

Has a travelling feed bed of new design to carry the stock under the saw. The feed rolls hold the stock at the same angle to the saw throughout the cut. The Type G-2 makes the cut at any angle without any adjustment. The

operator can make his cut instantly, without waiting to adjust anything, thereby greatly increasing his output. The cut itself is so smooth that no further preparation for gluing is needed in many cases.

This machine has devices and conveniences to reduce cost and increase output not possessed by other machines. Send for full details, photographs and samples.

P. B. Yates Machine Co. Ltd.

HAMILTON, ONT. CANADA

U.S. Plant : BELOIT, WISCONSIN



VIEW OF PART OF OUR YARD AT MILL No. 1, BATHURST

LUMBER

Dry Spruce and Pine, Rough or Dressed

LATH

Spruce, Fifty Pieces Per Bundle
For Rail Shipment

SHINGLES

"BEAVER BRAND"
Cedar—Full Count

Monthly Stock and Price List on Request

BATHURST LUMBER COMPANY, Limited
BATHURST, N.B., CANADA

CUT GEARS



Details Needed in Order to Quote On or to Supply Gears

- 1.—CLASS OF GEAR—Spur, bevel, spiral or worm.
- 2.—MATERIAL.
- 3.—QUANTITY to be made at one time.
- 4.—Number of TEETH.
- 5.—PITCH of teeth or DIAMETER of gear.
- 6.—Width of FACE.
- 7.—Diameter of BORE.
- 8.—HUB extensions, if any.
- 9.—KEY SEAT dimensions, whether parallel or taper, and if taper, which way key is to drive.
- 10.—SET SCREWS, size and location.
- 11.—QUALITY of finish and any special requirements of SERVICE.
- 12.—For BEVELS state number of TEETH in MATING gear.

Attention to these details will save trouble and delay, and you will get better service and prices by definite specification of requirements.

Write us for Quotations.

Hamilton Gear & Machine Co.

COR. CONCORD
& VAN HORNE

TORONTO

Polarine

65% of the depreciation of the average car is preventable by the use of a good lubricant.

Polarine prevents *preventable* wear and tear. It lubricates efficiently under all conditions and deposits a minimum of carbon.

THE IMPERIAL OIL COMPANY
Limited
BRANCHES IN ALL CITIES

T. 212

MADE-IN-CANADA

Toronto, Ontario

Mr. Manufacturer:—

Are you sincere in your desire to boost and make greater the British Empire by the buying of Canadian made goods? If so, look over the following list of high-grade oils, greases, compounds and paints manufactured in our oil refinery at Petrolia and our paint works at Toronto, Ontario. A postal card from you will bring you full information regarding the goods in which you are interested.

CYLINDER OIL

ENGINE OIL

MACHINE OIL

DYNAMO OIL

TANNER'S OIL

BLACK
LEATHER OIL

PARAFFINE
WAX

MINERAL
SOAP STOCK

BENZINE



WHITE LEAD

READY MIXED
PAINT

COLORS IN
OIL

VARNISHES

BLACK
JAPANS

STEEL BRIDGE
PAINTS

ROOFING
PAINTS

CUP GREASE

LINSEED OIL
SOAP

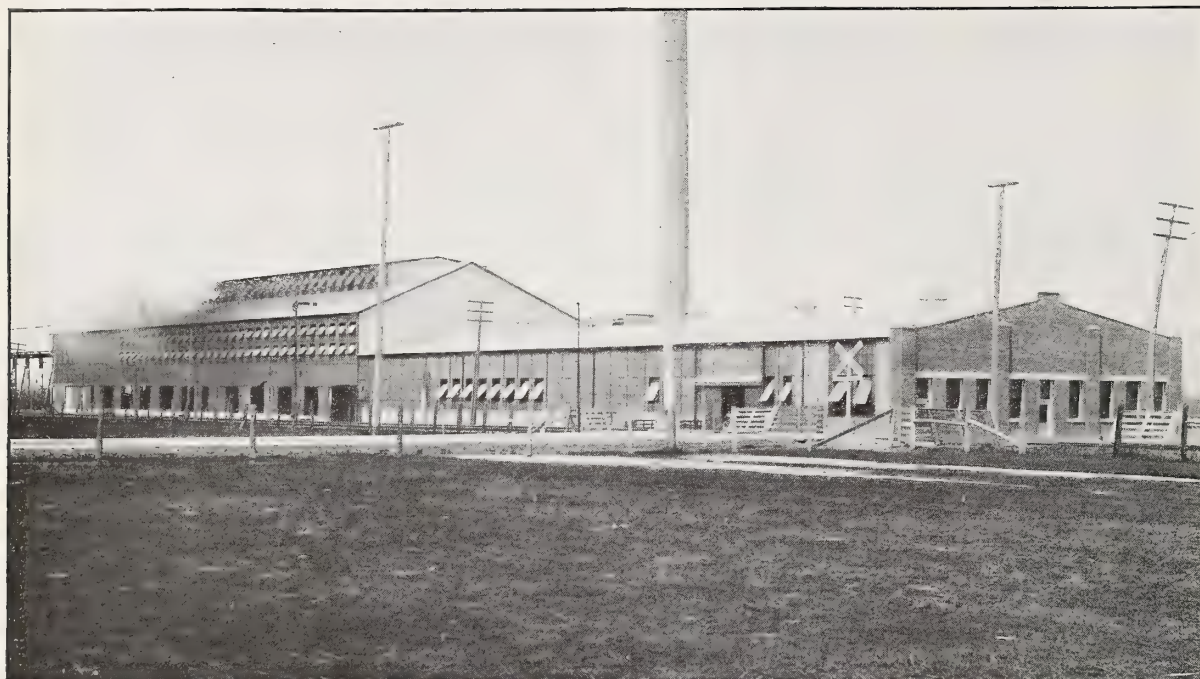
Changes in policy mark eras in the records of conservative corporations, and when aggressive must be based on the optimism of the executives. If effective now, they are expressive of confidence in Canada's industrial future.

FULLY in harmony with the progressive attitude of expansion assumed by Canadian manufacturers and producers, we have taken the step forward with them and established a department devoted to the construction of industrial buildings.

¶ We have brought into our organization men of recognized ability in this field of endeavor whose efforts we assure will produce results equaling the standard of our attainments in the past.

¶ To Architects, Engineers and Owners contemplating such construction we offer our services.

THE FOUNDATION COMPANY, LIMITED
MONTREAL



**The Most
Up-to-Date
Forge Plant
on the
American
Continent**

**Daylighted
with
Trus-Con
Steel
Sash**

Wells & Gray, Contractors

Dominion Forge & Stamping Co., Ford, Ont.



TRUSSED CONCRETE STEEL CO. OF CANADA, LIMITED

Head Office and Works - - Walkerville, Ont.

BRANCHES:

Montreal

Toronto

Winnipeg



If you will remember us in connection with your future wants, we shall both be benefited.

To CANADIAN MANUFACTURERS

We are truly sorry we cannot take the belated rush orders for "Premier" Galvanized Sheets, Made-in-Canada, but, naturally, we had to first care for our original customers, who have used "Premier" Sheets since we commenced operation in August, 1915.

They have found that our service, and the splendid quality uniformly furnished, has been of great assistance these trying times.

**The Dominion Sheet Metal Co.
Limited**

Hamilton

Ontario



Building 500' x 60'

Construction completed in 15 weeks.

Reinforced Concrete Factory Building WHICH WE HAVE RECENTLY COMPLETED

We are familiar with all up-to-date methods of construction and would be glad to give accurate estimates of cost and such other information as you may desire, promptly on request.

Work done in all parts of Ontario

WELLS AND GRAY, Limited
ENGINEERS AND CONTRACTORS

Branch Office :
Bank of Commerce Bldg.,
WINDSOR, ONT.

247 Confederation Life Bldg.,
TORONTO

Show This Advertisement to Your Power Man—

A SUPERINTENDENT WRITES :

Oshawa, Ont., March 30th, 1916.

Galt Foundry Co.,

Galt, Ont.

Gentlemen :—

Some months ago we ordered one set of McNaughton Rocking Grates for our No. 1 Boiler. We have been using this continually ever since, and they gave us such good satisfaction, that we followed up the order with two more sets for our No. 2 and No. 3 boilers. We may also add that these are giving entire satisfaction and showing a clean fire at all times.

Yours truly,

(Signature).....

Name of above company on request.



SHOWING SINGLE BAR WITH
SECTION REMOVED

A GRATE BAR

that gives universal satisfaction. It is in use in more than one hundred of the biggest plants in Canada.

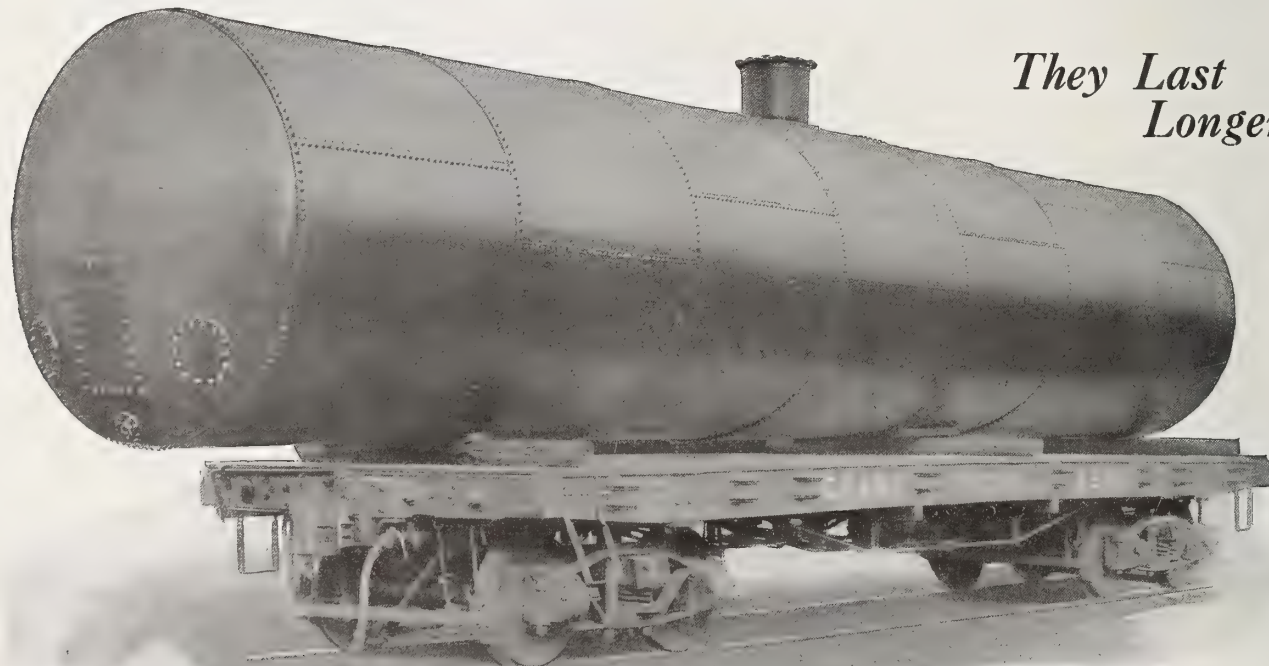
The McNaughton Rocking Sectional Grate Bar

has high efficiency, long life and low repair costs.

Write for Descriptive Leaflet

GALT FOUNDRY CO. - - Galt, Ontario

WATEROUS STEEL PLATE TANKS



*They Last
Longer!*

The Waterous Engine Works Co., Ltd., Brantford, Canada

When writing advertisers, please mention INDUSTRIAL CANADA.

THE BUFFALO METER CO., of Buffalo, N. Y., is now listed among the hundreds of other well-known concerns who are cutting coal bills with the Morehead Back-to-Boiler System.

The management of this new daylight plant—trained by the very nature of the business to figure in terms of **certainty**—installed the

Morehead Back to Boiler SYSTEM

only after absolute proof of a substantial saving in fuel expense.

As long as you allow the condensation to grow cold in your steam lines you are losing heat units that cost you dollars—**actual money**—to produce.

The Morehead System drains the steam lines instantly and

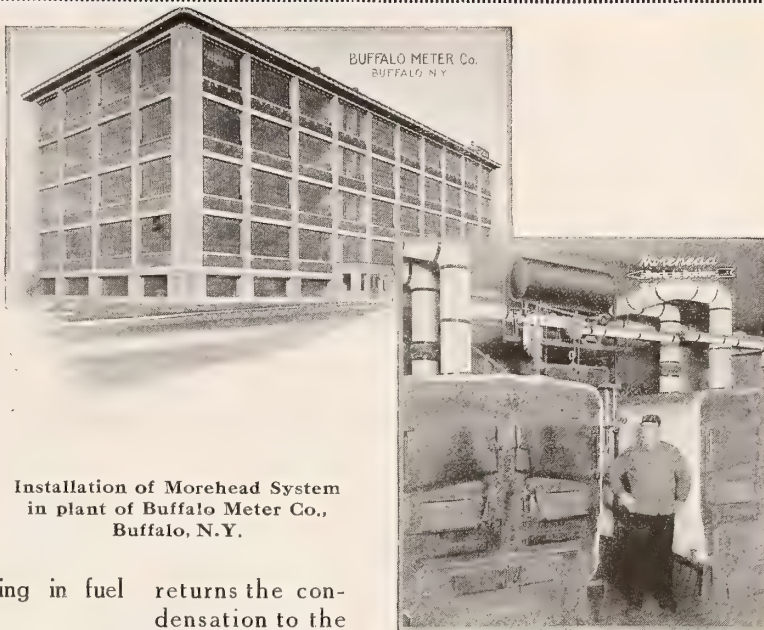
returns the condensation to the boilers as feed water—**pure** and **hot**—in just the condition to use again with the least consumption of fuel.

Send for complete details and illustrated catalogue to-day.

Canadian Morehead Manufacturing Company

DEPT. "K" - WOODSTOCK, ONT.

394



Installation of Morehead System
in plant of Buffalo Meter Co.,
Buffalo, N.Y.

Feed Your Boilers Economically

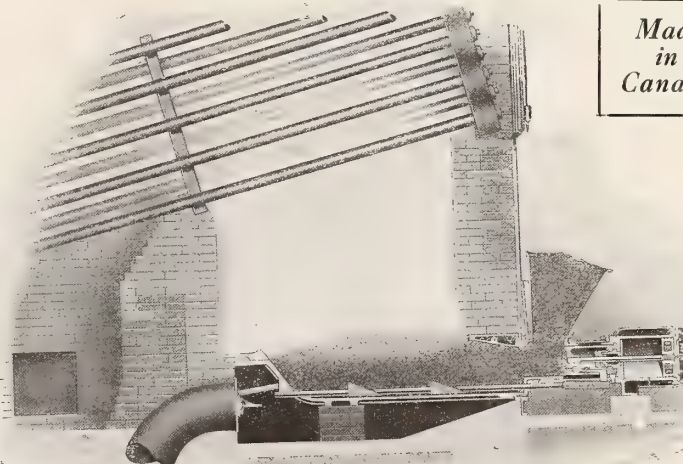
"Of course," you say, "we think we do—we are not asleep!" But if you are paying wages to firemen to stoke boilers with a shovel, you are losing money every day, not only by paying for unnecessary labour but by an actual failure to get full value out of the fuel. Stoke your boiler fires the *saving way* by installing the

JONES UNDERFEED STOKER

(Made in Canada)

This is an absolutely efficient mechanical stoker that is a time-proved coal saver.

From actual tests under practical, every-day conditions in hundreds of boiler rooms in Canada and elsewhere it is shown that the Jones Stoker will save from 15 to 25% on fuel cost.



Made
in
Canada

Jones Underfeed Stoker Company, Limited
NATIONAL TRUST BUILDING, TORONTO

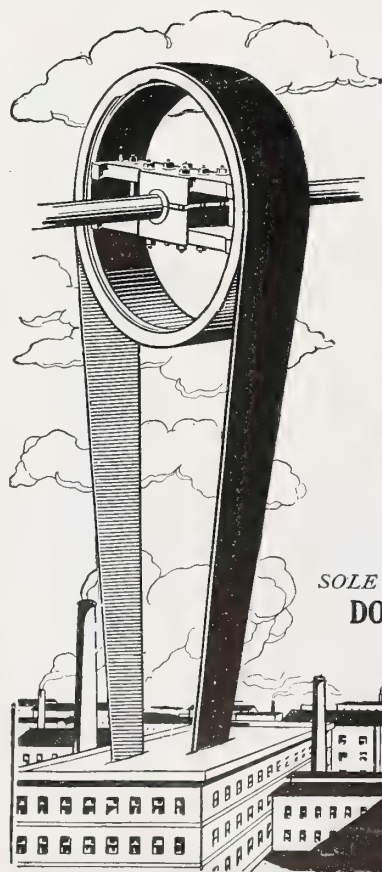
That grim spectre—



RELENTLESS and ever present in Factory operation is the spectre of Overhead Charges.

Its ravages among the profits of your business must be constantly checked. One of its most active lieutenants is *Power Wastage*—caused by belt slippage over metal pulleys. Many thousands of dollars are wasted yearly in Canadian Factories and workshops where Wood Pulleys would save 50% of the waste.

Actual scientific tests show that on the average you can buy *four* Dodge Wood Split Pulleys with the money you now lose by waste from one Metal Pulley. Therefore we appeal to Presidents of Companies, Managers and Superintendents of Factories, Engineers and others, to personally supervise the buying of their pulleys and specify always—



DODGE

WOOD SPLIT PULLEYS

SOLE MAKERS:

DODGE MANUFACTURING CO. Limited, TORONTO





ACETYLENE

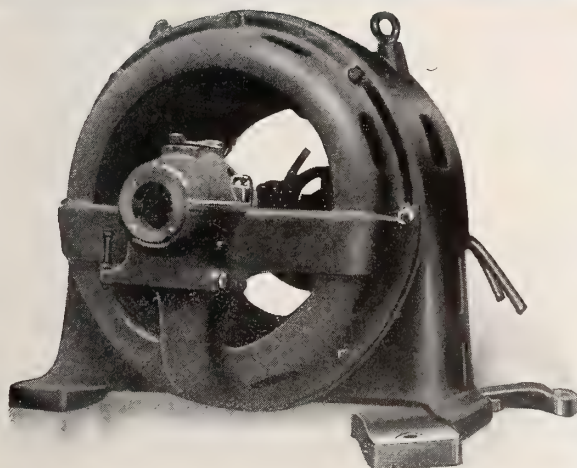
Every lump of our Carbide is full of Acetylene Gas. That explains why we have so many pleased customers and get repeat orders.

ADDRESS :

Canada Carbide Company, Limited
MONTREAL - CANADA

Works:
Merritton, Ontario
Shawinigan Falls
Quebec

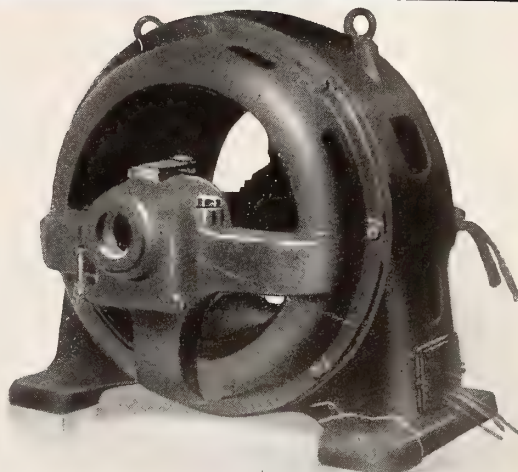
Ask for the GREEN Drum



Broken leg of an electric motor.

WHEN TIME IS WORTH MORE THAN MONEY,

and breakage such as the illustration, etc., occurs, remember that the OXY-ACETYLENE Process can make it as good as new. It took but a couple of hours to put this motor in operation again and the cost of repairs was only a few dollars.



The same, after being welded

Welding saves thousands of machines from the junk pile daily, and you certainly can find valuable applications of the process in your works.

Why Not Investigate Into This Process To-day?

We are the pioneers of the Process, and we only supply apparatus which have withstood the test of years of practice.

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Incorporated 1869

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Total Assets.....	\$270,000,000

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Established 1865

Head Office, Winnipeg

Paid-up Capital.....\$5,000,000

Reserve Fund.....\$3,400,000

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Incorporated by Royal Charter in 1840

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Reserve Fund.....\$3,017,333.33

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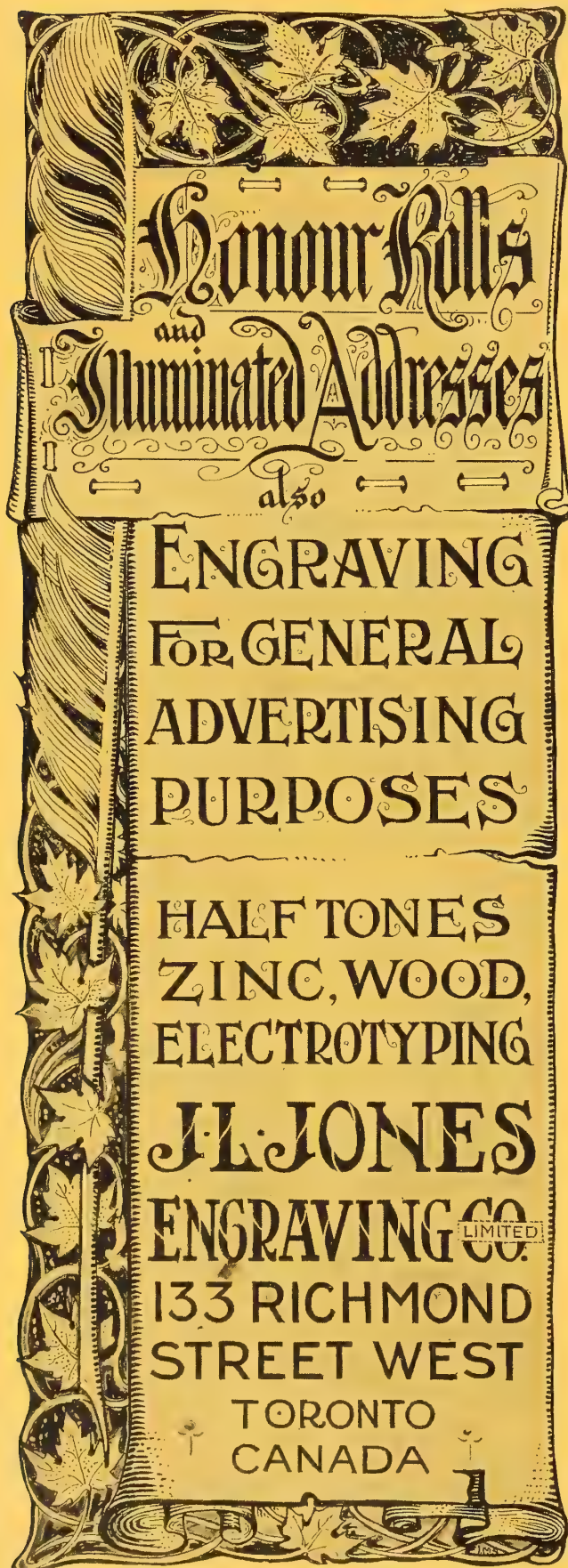
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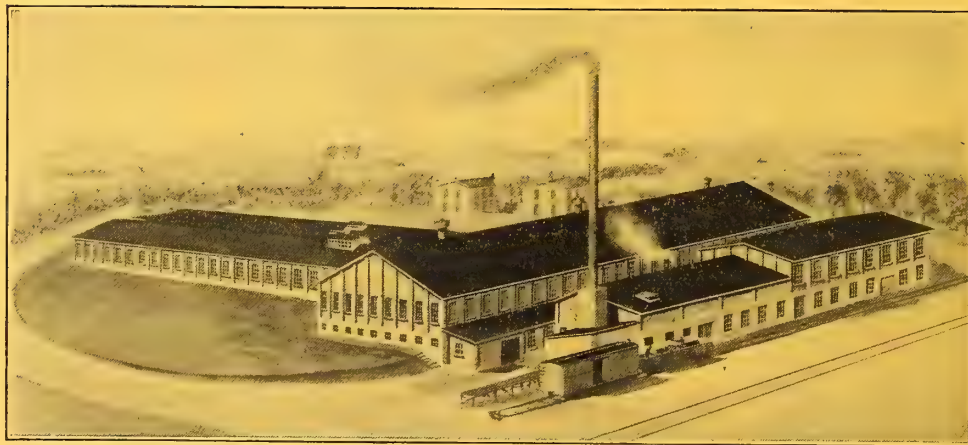
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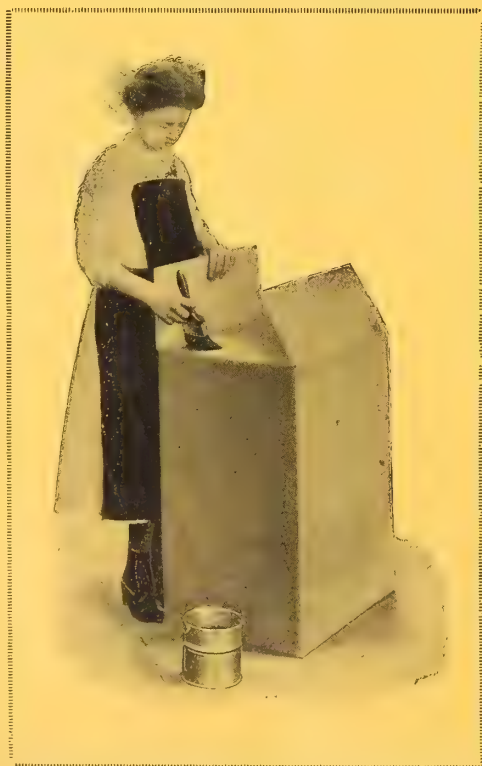


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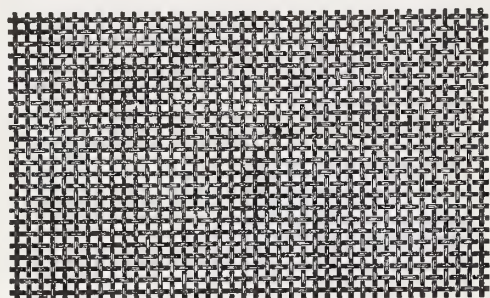
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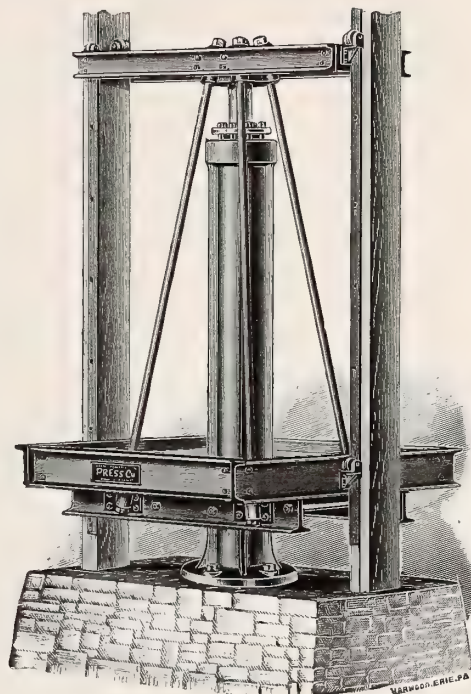
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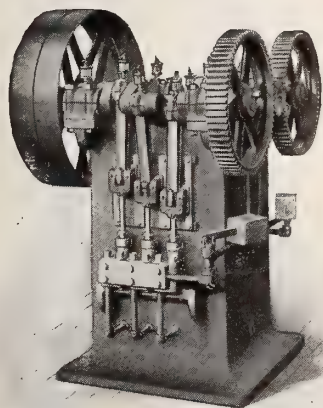
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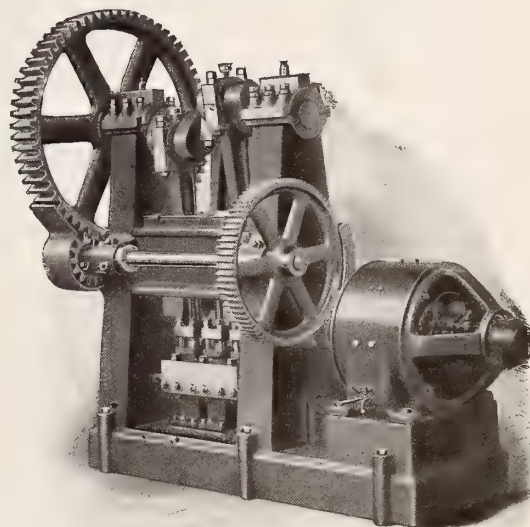
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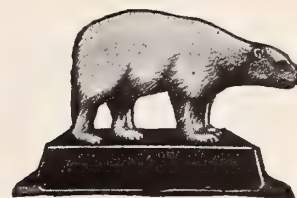
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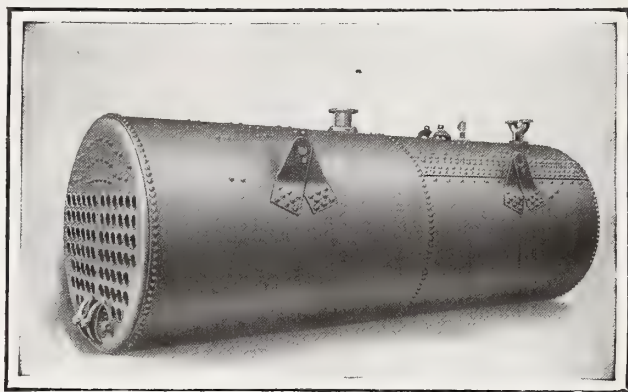
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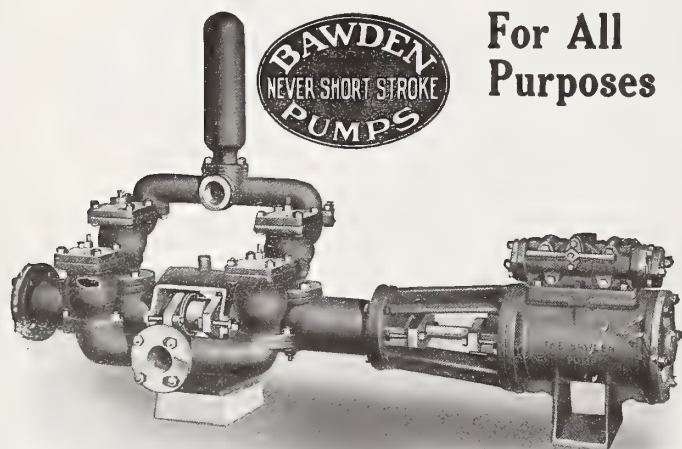
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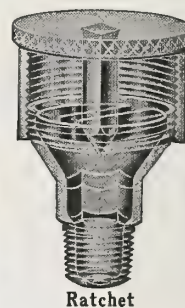
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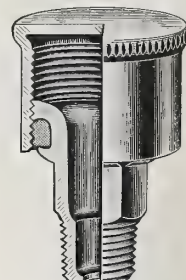


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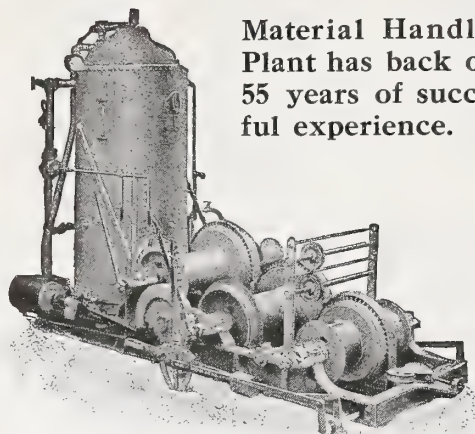
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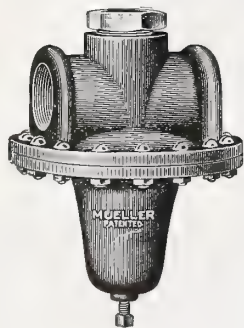
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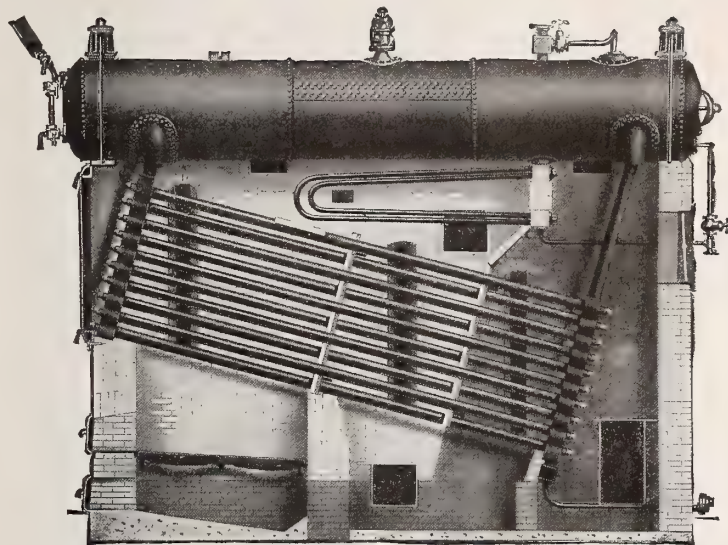
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Type "B" Sectional Water Tube Boiler.

It is the only way to be absolutely sure of an uninterrupted power service at all times. When you depend upon others, you never know when a "break in the line" is going to occur and your whole machine equipment may be suddenly stalled in the very midst of the most important and urgent operations, by the failure of something over which you have no control whatever. Far better to produce power of your own—and usually cheaper, too!

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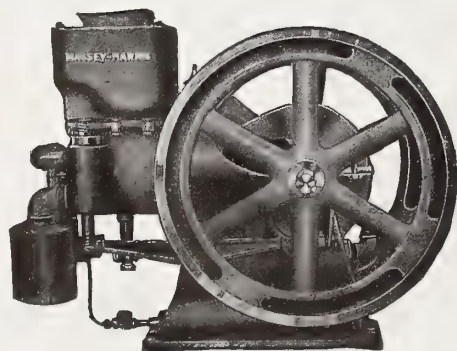
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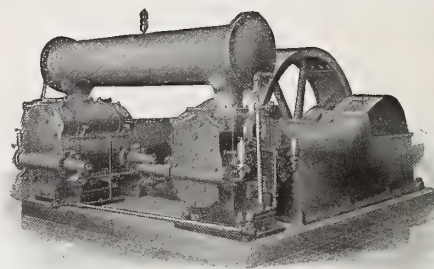
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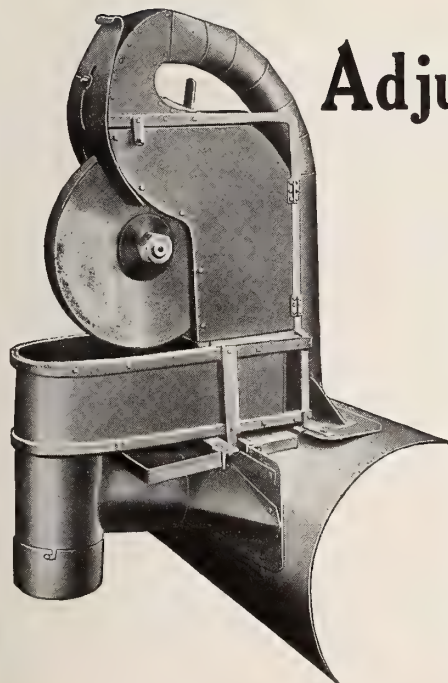
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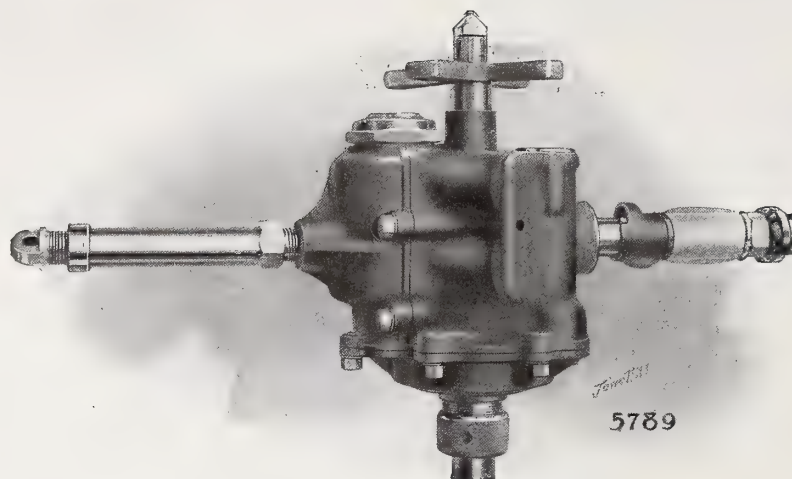
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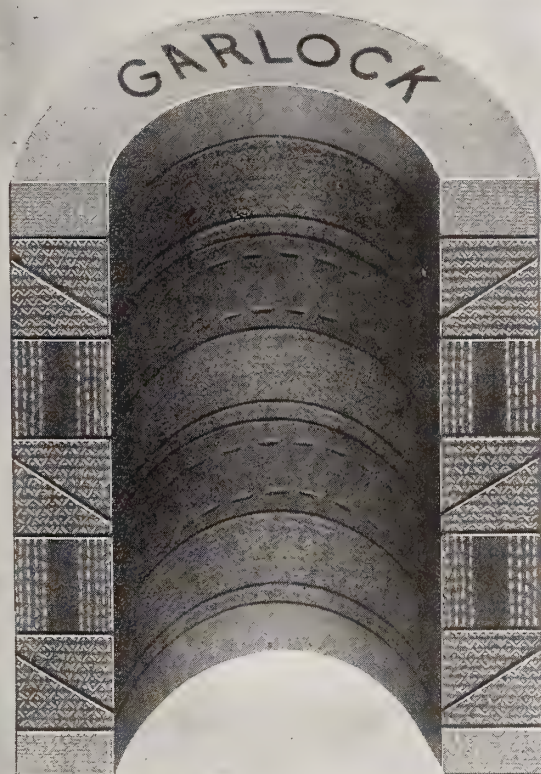
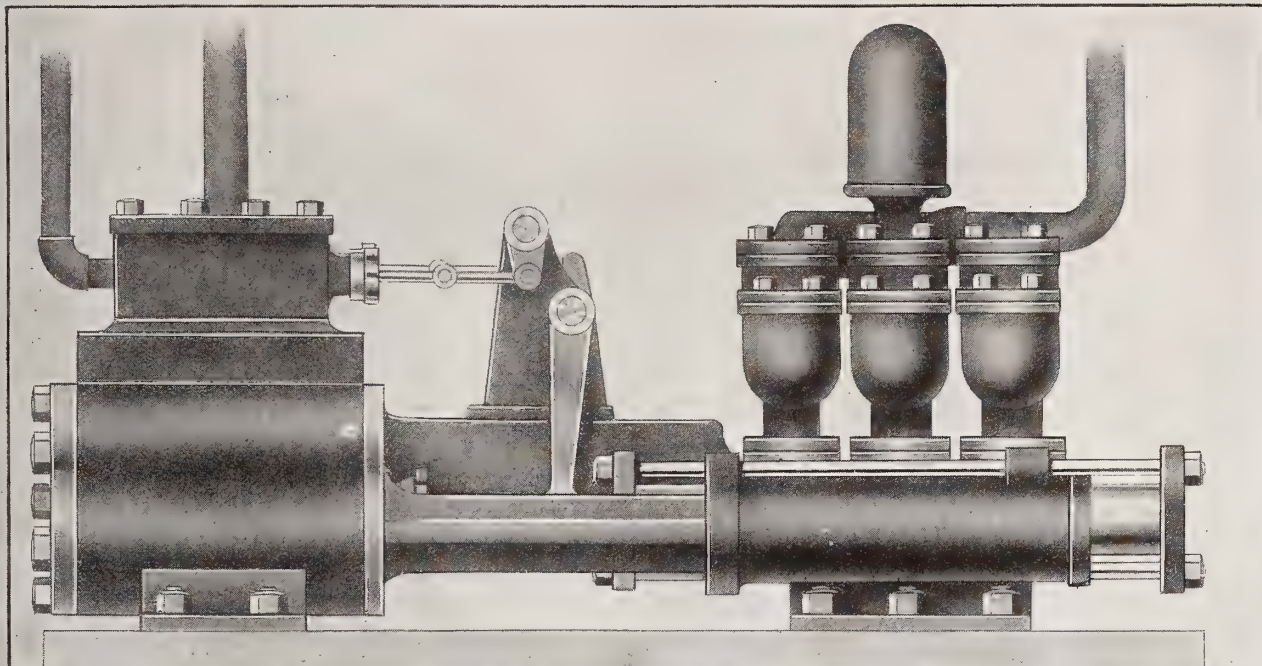
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This is the largest Pyrometer equipment in Canada—one of the 153 HOSKINS installations. More HOSKINS Pyrometers are used in Canada than all other makes combined. Write for new Catalogue.

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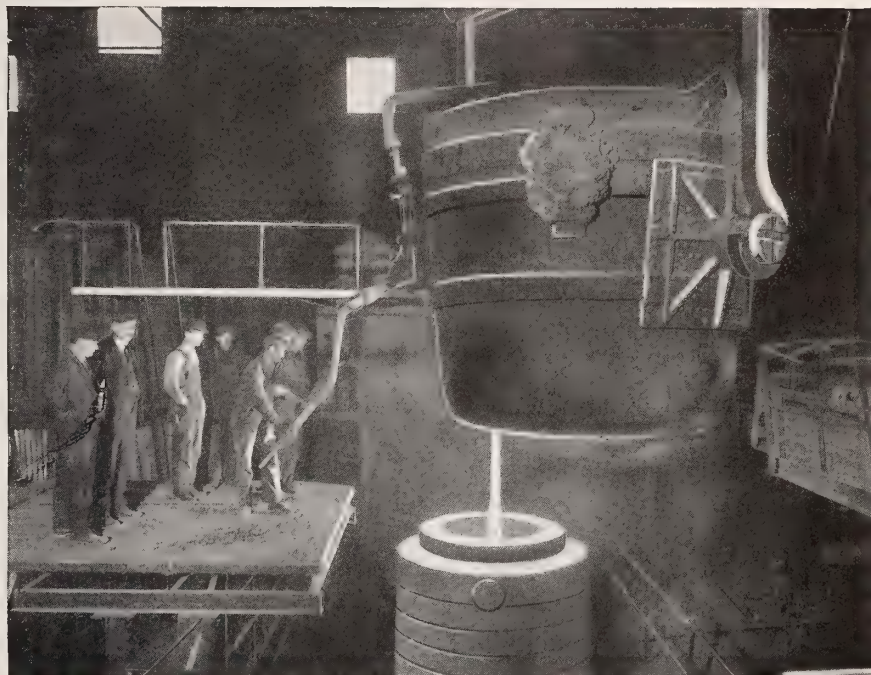
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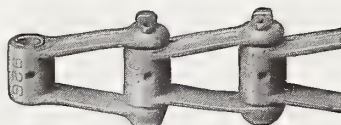
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Riveted Link - Belt, with shapes of side bars and end bars designed particularly for sawmill work, having wide sliding surfaces.



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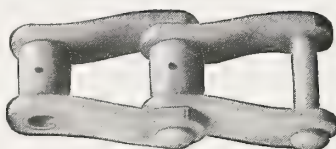
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Steel Link-Belt in different forms for various kinds of severe power transmission work. Styles, sizes and pitches adapted to individual requirements. Attachments in a variety of styles.



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High-grade, bushed steel roller Link-Belt used for moderately high speed transmission work. Furnished double, triple and quadruple as required.

This trademark  on every link.

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The quality, both of the product and the service, is largely the reason for the universal demand for Wires and Cables of Northern Electric manufacture.

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WROUGHT PIPE BLACK AND GALVANIZED
1/8 TO 4 INCH

Thoroughly inspected and tested
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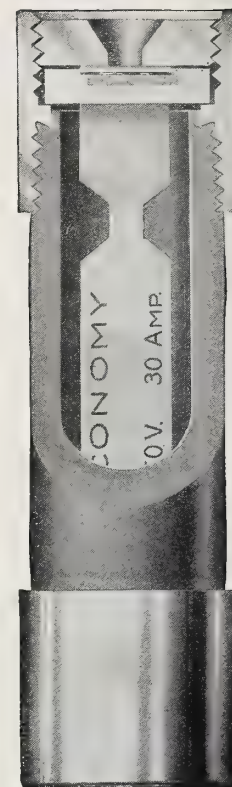
Write for Catalogue 40, stating capacity and voltage required, and we will send you, with the Catalogue, samples of the Economy Fuse, free of charge. Get them! Try them! The saving will convince you it pays to buy them. Sanctioned for use by the Canadian Board of Fire Underwriters.

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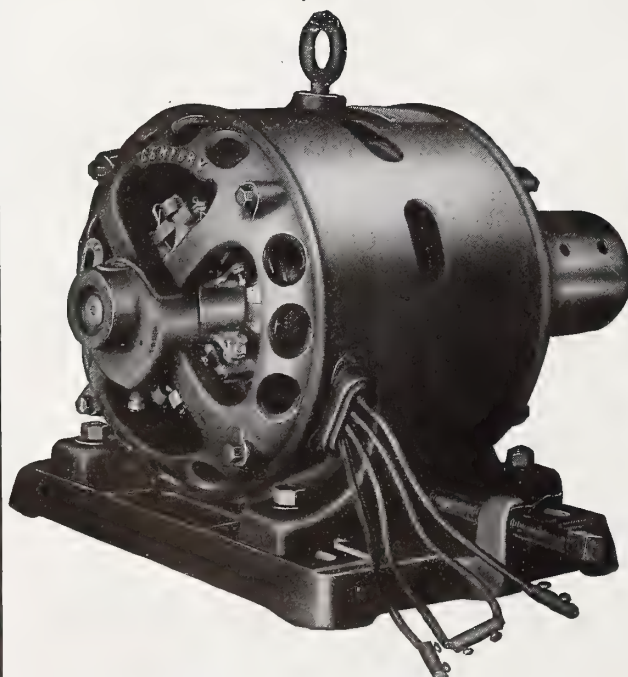


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No.	H.P.	Speed.	Make.	Type
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2	5	1800	T. & H. Elec. Co.	New
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2	40	850	Westinghouse	CCL
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1	20	850	Westinghouse	CCL
5	20	1120	Westinghouse	CCL
1	15	1120	Westinghouse	CCL
11	10	1120	Westinghouse	CCL
2	10	1800	Can. General Elec.	CCL
1	10	1800	Tor. & Ham. Elec.	CCL
2	7½	1800	Westinghouse	CCL
5	5	1800	Westinghouse	CCL
9	5	1120	Can. General Elec.	CCL
2	5	1800	Tor. & Ham. Elec.	CCL
1	3	1800	Westinghouse	CCL
2	2	1800	Can. Crocker Wheeler	CCL
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1	Auto Starter—new—C.G.E., 220 volts, 60 cycle, 3 phase.			

TRANSFORMERS		
60 cycles, 2200 primary, 220 volt, Secondary.		
4	25 k.w.	Westinghouse.
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Westinghouse

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For Squirrel Cage Induction Motors

Capacities $7\frac{1}{2}$ to 300 h.p., 110 to 2,200 Volts, 25 to 60 Cycle



Pedestal Form



Wall-Mounting Form

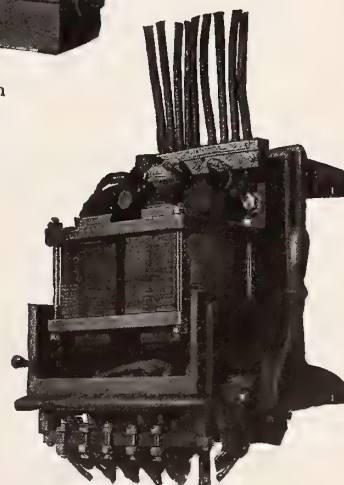


NEW FEATURES:—Arcing tips—easily renewable—on all starting and running contacts an exclusive feature.

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Made in two forms, wall mounting for capacities up to 75 h.p., pedestal for capacities above 75 h.p.

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Made in Canada

Buildings of
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Roofers: Farquhar Bros., Limited
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WE can't name names but there are two other types of roofs that are offered for the large flat-topped permanent buildings where Barrett Specification Roofs are so generally used.

On the theory of securing more competition and a lower price some architects make a custom of drawing specifications so broadly that any one of these three types of roofs is eligible, with the result that the flimsiest one, weighing 75 lbs. per 100 square feet, is occasionally selected by reason of its lower price instead of a Barrett Specification Roof, which contains 235 lbs. of waterproofing material when used over boards and 305 lbs. over

concrete and is correspondingly more durable.

In the case of one type a higher fire insurance rate is sometimes an additional penalty.

Now, there is plenty of competition available if a Barrett Specification Roof is exclusively specified.

If you want a cheaper, lighter and less permanent roof, specify that kind; but if you want a permanent, heavy, twenty-year-minimum roof that will take the base rate of fire insurance, that is approved by the Underwriters' Laboratories and needs no care, specify a Barrett Specification Roof—and see that you get it!

Every architect knows that if he allows "white pine or hemlock," it will be hemlock.

If he is equally charitable to several grades of roofing, it will be the poorest and cheapest. Specify specifically!

Our 20 - Year Guaranty Bond

We are now prepared to give a twenty-year Surety Bond Guaranty on every Barrett Specification Roof of fifty squares and over in all towns in Canada and the United States of 25,000 population and more, and in smaller places where our Inspection Service is available.

This Surety Bond will be issued by the United States Fidelity and Guaranty Company and will be furnished by us without charge.

Our only requirements are that the roofing contractor shall be approved by us and that The Barrett Specification, dated May 1, 1916, shall be strictly followed.

We know that if this is done the roof will surely last twenty years and probably much longer.

If you wish any further information regarding this Guaranty, write to our nearest office and the matter will be given prompt attention.

A copy of The Barrett Specification, with roofing diagrams, free on request.

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MONTREAL TORONTO WINNIPEG VANCOUVER

THE CARRITTE-PATERSON MANUFACTURING CO., LIMITED
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INDUSTRIAL CANADA

ISSUED BY
The CANADIAN MANUFACTURERS ASSOCIATION.
INCORPORATED.

Vol. XVII.

TORONTO, JANUARY, 1917

No. 9

INDUSTRIAL CANADA

Issued monthly as the official publication of the Canadian Manufacturers Association (incorporated), and devoted to the advancement of the industrial and commercial prosperity of Canada.

SUBSCRIPTION

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Controlling the Controllers.

WHAT is the proper function of a representative Government—to give the people the things they want, or to give them the things they really need? Remembering that unpopular measures may ultimately work out for a nation's good, how far is a Government justified in introducing measures that run counter to popular opinion?

Taxes of any kind are unpopular with the people upon whom they fall. Ask any miscellaneous gathering for a show of hands on the question of abolishing taxes altogether, and probably the majority would vote "Yes." Still we have taxes. Why? For one reason, because we have to have them; without them civic government would be impossible. Another reason we have them is that, despite their unpopularity, the average man, on second thought, appreciates their necessity, and submits himself to them.

Had the Minister of Finance taken a plebiscite as to whether the rate of letter postage should be advanced to three cents or kept at two cents, the vote would probably have been overwhelmingly against the change. No doubt he knew what the sentiment of the people would be, yet

he deliberately ran counter to popular opinion and put the rate up. Why? Because he had to have the money, for one thing, and in any event he knew that sooner or later the public would appreciate the necessity for it.

The man who would admit the necessity of taxation, or who would agree to the principle of a charge for transporting letters, and then refuse to pay his taxes, or demand free mailing privileges, would be either a fool or a knave. Persistence in such a course would lead to his being examined with a view to confinement either in an asylum or a gaol.

The Government of Canada took no plebiscite as to whether this country should or should not enter the war on the side of Great Britain. They knew it was unnecessary to count votes on such a question; they were absolutely certain the people would answer "Yes." So they put us into the war, and we're still in it, very much in it.

Now the price of war is sacrifice, just as the price of taxation is sacrifice. As individuals we must all pay taxes; as individuals we must all take part in the fight. Some of us may do it in one way, some in another, but the important thing to remember is that we must all play the game.

If some of us are not playing the game, what then? Do we leave the payment of taxes voluntary? If a man comes forward and says he has a conscientious objection to paying taxes, do we allow him to enjoy all the benefits of good government at the other fellow's expense? What we do is to dispossess him, to turn him out on the street. If he continues to misbehave, we provide him, at the expense of those who have paid taxes, with a lodging where he has time to meditate upon the error of his ways.

But we don't mete out that kind of treatment to the man who has a conscientious objection to making the sacrifices entailed by war. Why? Because we are without the moral and physical force of the men who have made the sacrifice, and who are now on foreign soil. The soldier disfranchises himself; the slacker retains his vote. The greater the number of those who disfranchise themselves from a sense of loyalty, the more influential become the shirkers who, blind to their disloyalty, stay at home in comfort.

Every Man to His Post.

THE men at the front are under discipline and control of the strictest kind. Implicit obedience is one of the first lessons they are taught when they put on the King's uniform. Each in his own sphere must use his head, and govern his actions according to circumstances, but the command of a superior officer is something to be instantly obeyed at all times.

This is a principle that has been carried into the conduct of all wars, great and small, from the beginning of time. It is not peculiar to the Herculean struggle that has been going on in Europe for the past two years and a half; even the forces that engaged in a few weeks' skirmish on the Mexican border had to be governed by it. Discipline is discipline the world over.

Naturally there are periods of relaxation, but never on the firing line. Relaxation may be permitted back from the danger zone, as, for instance, in the Army Service Corps. It may be permitted with increasing frequency the further back one goes, to the transports, to the training camps, to the parade ground where the recruits are drilled. But the element of discipline is always there, the army is always under effective control.

But what of the other army, the army of industrial workers, who produce the food, the clothing, the weapons and the ammunition, without which the fighting army would be helpless? Would not the benefits resulting from effective control be just as apparent in one case as in the other? With military operations conducted on a small scale, there may not be the same urgent necessity for the control of industrial workers, as there is for the control of fighting men, because the needs of the latter can usually be supplied by the simple process of purchasing in the open market. But as military operations increase in extent, as the call goes out for more men, it is obvious that the ranks of the industrial army must be drawn upon to swell the forces of the military army. The volume of supplies required keeps growing, while the number of workers available for the production of those supplies keeps steadily decreasing. A point is finally reached when the open market fails as a dependable source of supply for military requirements. When that time comes, then the control of industrial operations is more than a thing to be desired, it is something that is essential.

For some of our allies that point was reached long ago; for Canada it is surely here now. We are fighting a combination of powers that are mobilizing against us every man who is capable of bearing arms, every ounce of material that can be advantageously employed. Nothing is being neglected that could possibly be thrown into the scale against us. From such a struggle we can only hope to emerge successful according as we make war our first and only business as a nation, and avail ourselves fully of every resource that is at our command.

The time for voluntary service is past. Compulsory service, whether in khaki or out of khaki, coupled with the complete mobilization of our resources in money and material, is now the only sure guarantee of safety. A

nation off duty is no more able to protect its liberty than a soldier off duty is able to hold a trench. So far Canada has never really been on duty, and she never will be, in the true sense, until she thoroughly organizes herself for the task ahead, assigns every man to a post, and sees that he is at it.

Stop Muddling.

DURING the early stages of the war, while Britain was making mistake after mistake, a good deal of comfort was taken out of the feeling that somehow or other she would manage to "muddle through." That was the time when the average Britisher felt that he must show himself to the enemy, not merely as confident of the outcome, but quite unruffled by the slight inconveniences of the war, and he prided himself on his motto of "Business as Usual."

Britishers have long since dropped that attitude. Whether or not their country really could have managed to muddle through matters very little. The fact is that when they came to their sober senses they decided they could not afford to take the chance. The theory that business could be conducted as usual was soon exploded when it was realized upon what a gigantic scale the war was to be waged. As factory after factory passed under the control of the Ministry of Munitions, as plant after plant was called upon to relinquish its peace-time production in order to serve the needs of the fighting forces, as restriction after restriction was passed for the safeguarding of life and property, as indulgence after indulgence was asked to be surrendered in order that materials necessary to the life of the nation might be conserved, the truth was borne in upon the Britisher that business as usual, besides being impossible, was not even desirable, that there was one thing and one thing only that counted, and that was to achieve victory regardless of the individual sacrifice that might be necessary to that end.

Canada's interest in achieving victory is just as vital as Britain's interest. If she falls, we fall; if she wins, we win. Not being so near the scene of action as she is, it is hardly to be expected that we would appreciate the seriousness of the situation as keenly as she does. But we should be above any desire to loll in comfort at her expense. Our gratitude for the protection she is affording us should inspire us with a determination to meet sacrifice with sacrifice. Without that spirit, the boasted solidarity of our Empire becomes a pricked bubble; without the practical application of that spirit among all the Allies, our cause is lost.

Let Canada pay heed, therefore, to the words of Mr. Lloyd George, as voicing the best-informed opinion in England as to the part which the people of the Mother Country must play from now on. In the course of his reply in the House of Commons to the German peace proposals, he said:

"You cannot have absolute equality of sacrifice in war—it is impossible—but you can have equal readiness of sacrifice from all. There are hundreds of thousands who have given their lives; there are millions who have given up comfortable homes and exchanged them for daily com-

munion with death. Multitudes have given up those they love best.

"Let the nation as a whole place its comforts, indulgences, and elegances on a national altar, consecrated by such sacrifices as these men have made. Let us proclaim during the war a national Lent. The nation will be better for it—stronger mentally, morally and physically. It would strengthen its fibre and ennoble its spirit."

Canadians may cheer these sentiments to the echo, but so long as they are content to keep on muddling, their loyalty and devotion are shallow and insincere.

A Cry from Macedonia.

ONE of the problems that is already serious, and certain to become even more so before the war is over, is the production and distribution of food. Here in Canada, with illimitable acreage that might be producing but is not, we are learning to appreciate through the high cost of living how a scarcity of food first begins to manifest itself. Over in England there are well-to-do people who have been using margarine instead of butter for months, and to whom a fried egg is a luxury to be indulged in only on festive occasions.

Looking at it from a purely selfish standpoint, it is nobody's concern but our own that we don't produce more food in this country, so long as we are prepared to pay the price of our shortsightedness. But what of England? As the so-called Granary of the Empire, are we under no obligation to keep her supplied? Remembering the protection her navy has always afforded us, and the submarine frightfulness by means of which the enemy is now endeavoring to reduce her imports of food, is it not our sacred duty to hasten to her assistance by producing the very utmost of which our united efforts, intelligently directed, are capable?

This is not a case of talk for talk's sake. The situation facing England is a serious one, and what is serious for England is serious for us, because England is our greatest bulwark of protection. Mr. Lloyd George's observations on this question are very much to the point:

"The food problem," he told the House of Commons, "is a grave problem, and would become graver unless not only the Government but the nation is prepared to grapple with it without loss of time."

"The main facts are that the available harvests of the world have failed. In times of peace we could always make up the deficiency of one particular country by resorting to another. If America failed there was Russia or the Argentine, but the Argentine promises badly as well as Australia, and Russia is not available."

"Under the circumstances it was decided by the late Government to appoint a Food Controller, and we actually appointed him—an able and experienced administrator, a man of great determination and force of character. And he is assisted by one of the greatest agricultural experts in this House. At the head of the

Board of Agriculture we have a man singularly gifted, who has as thorough a knowledge of principles and practices of this question as any man in this or any other country.

"I have felt it important that we should secure the best brains in the country to bear on this very difficult and dangerous problem. The problem is a double one. It is one of distribution and of protection. In respect of both we must call on the people of this country to make real sacrifices, but it is essential if we do so that the sacrifice should be equal. Over-consumption by the fortunate must not be allowed to create a shortage for the less well-to-do."

"I am sure that we can depend on the men and women of all conditions, to use the ordinary phrase, to play the game. Any sort of concealment hurts the nation when it is fighting for its life. Therefore, we must appeal to the nation as a whole (without the help of the nation we can accomplish nothing) to assist us in so distributing our resources that there shall be no man, woman or child who suffers from hunger because some one has been getting too much."

"When it comes to production, every available square yard of land must be made to produce food, and the labor available for tillage should not be turned to mere ornamental purpose until the food necessities of the country have been adequately safeguarded. The best use must be made of the land and of all available labor to increase the food supplies of the country. All those who have the opportunity must feel that it is their duty to the State to assist in producing and contributing to the common stock from which every one draws."

In the ears of Canadians, this message should ring like the cry from Macedonia. We should help if we could; we could help if we would. The impulse to help will be spontaneous with every one of us. But we want leadership and direction. Our Government might perhaps start the ball rolling by opening the door of the Cabinet to some capable business man who has made good as an organizer, let it dignify him with some such title as Minister of Production, and give him some money to spend. There are hundreds of thousands of people who have signed the National Service cards who may be safely depended upon to do the rest, people who are craving an opportunity to do something useful and who only ask to be told the forms of service that will be acceptable.

Save and Serve.

FOOD is not the only thing with which we could help England. She needs money, and needs it badly, because upon her shoulders, as perhaps the broadest and most capable, have fallen many of the financial problems of her Allies. So long as she was placing unlimited orders with the United States, her credit there was good. But

since latterly she has commenced to transfer as much of that business as possible to Canada, there have been official cautions issued to national banks against increasing their holdings of her paper.

If only for the reason that Canada has profited by the transfer, she should now show herself ready to reciprocate. We may need a few hundred millions more for our own undertakings, which in due course we will provide, but for every dollar we put into a Canadian war loan we ought to be able to find four shillings to lend our Mother Country. And we would find them if we only realized the unprecedented importance of money as the struggle hastens on to its concluding stages.

But again we want leadership and direction. We want an evangelist of thrift, who will lay bare to us in all their heinousness our sins of extravagance and bring us to repentance in sackcloth and ashes—an evangelist who will rescue us from the intoxication of prosperity and convert us to the religion of economy. If moral suasion is not sufficient to bring us all to the proper frame of mind, our Government should not hesitate to use compulsion in checking indulgences that are an offense against the spirit of saving by sacrifice.

When we remember that Canada owes her immunity from the devastations and horrors of war to the men of the British navy who, week after week on the North Sea, endure unflinchingly the withering blasts from the Pole that lash their faces with frozen spray; when we picture to ourselves the misery and wretchedness of a winter in the trenches, and contrast our own life of ease and comfort with the daily hell our boys are suffering that we may be protected, should we not ask ourselves, in all sincerity, are we worthy of sacrifices so heroic? Are the profits we derive from war business legitimately employed in attending theatre performances with the luxury of a four-thousand-dollar limousine, when England is going into the highways and byways for money to defend our liberties? Are the emergency wages we earn in the munitions industry legitimately employed in the purchase of pianos and expensive furs when homes that have been desolated by the war are suffering privations? Is it fitting that we should be spending money freely on hockey matches and moving picture shows when there are men at the front who would shed tears of joy to have the comforts that money would buy? Is it fair, is it decent, that we should indulge without stint our taste for confections, for imported delicacies, for liquors and cigars, when those who are in the best position to know assure us that the side which can put up the last shilling is the side that will win the war?

There are untold possibilities for good in a thrift campaign. We offer no opinion as to what the relation of the Government to such a campaign should be; we simply cite it as one of the national problems that call loudly for attention, and to make clear the fact that Canada can strengthen the hand of Great Britain in more ways than by conscripting her man-power and increasing production of food. We have the power to help. What we need is the will to help.

Canada's Second Campaign.

WHEN the last shot has been fired in this great struggle of the nations, there will be no breathing space before another struggle ensues—that for commercial supremacy. And the country which is best prepared to get its trade and commerce into stride is the country that will profit most. Canadian industries are as yet only partially developed, but we have immense possibilities as a country infinitely rich in raw materials.

Our trade and industry has been lately resting on an unnatural prosperity. Farm produce reached record prices and factories expanded by thrice their normal outputs. Gigantic war orders gave an enormous impetus to trade, and our unemployed were absorbed in the large army that our Dominion trained and equipped. Everywhere every line of effort faced a new order of things, but with peace we have to face a vast readjustment. Our manufacturers must again concentrate their efforts to the production of goods for domestic use and export trade; our iron and steel interests will have to reinstate the old peace machinery. In every line we will have to hunt up new markets in a world seething with the greatest competition.

Canada's captains of agriculture, industry and commerce will have to consider our market opportunities at home and abroad, credit information and banking facilities, labor, immigration, industrial equipment, industrial research, and the greater use of our potential wealth in the form of raw materials. In the trade war to come we have first the home market, the domestic demand, to fill. And as a country we are faced with great foreign markets which we can enter if only we develop our export trade to meet the competition that will ensue.

The war has taught Canadian industry two things: firstly, that we are called upon to export many things in enormous quantities which we formerly produced only in limited quantities; secondly, we have been forced to utilize our own resources and our ingenuity in producing commodities in Canada that we formerly wholly or largely imported. These changes will be in the end to the benefit of the consumer.

Certain lines of goods were cut off altogether by the war, or accustomed supplies were greatly reduced by the lack of ships. In either case we learned to manufacture goods formerly bought abroad, and this, in the end, will be of more real benefit to Canada than the temporary prosperity of war orders.

For example, our toys were formerly largely imported from Germany. It is not too much to say that Canada should be perfectly able to produce in the Dominion all the toys and dolls that are necessary for the welfare of younger Canada. We could also establish a Canadian fur industry, for we are in the peculiar position of being a very large producer of raw furs which we send abroad for dressing and dyeing, then bring back, paying high duty and transportation charges. In a country where furs are so necessary surely this is a shortsighted policy. In the United States in 1914 there were six concerns making finished dyes. To-day there are twenty-four. Surely there is a moral for Canada in this object lesson.

THE OCEAN TRANSPORTATION PROBLEM*

A matter of the most serious importance, calling for the constitution of an Imperial Board, with jurisdiction over the whole question of rates

By SIR HENRY DRAYTON

Chief Commissioner, Dominion Board of Railway Commissioners.



Sir Henry Drayton

I MUCH regret that the task of answering Sir Norman Hill's report has not fallen to the lot of someone more conversant with steamship practices than myself. From the very nature of things, this position, however, is inevitable. No shipper and no official of the Canadian Government has anything like the knowledge of the business of Conference Lines and their practices that Sir Norman Hill has, assisted as he was in the preparation of his report by "Gentlemen who have the conduct of the trade."

Sir Norman Hill's complete and forcible statements can only be answered properly after the present complainants have the benefit of

the information that only a full and thorough investigation of the different companies' books and practices will elucidate. In the absence of this information and the production of the voyage books, I make no attempt at any final answer or reply to Sir Norman Hill's report or evidence.

May I be permitted, however, to point out a few matters more or less on the face of this report apparent and which it is submitted with much deference call for the constitution of an Imperial Board, having jurisdiction over the whole question of rates, and a thorough investigation of the whole subject-matter by it.

Bills of Lading and Insurance.

Sir Norman Hill's report, as printed at page 17 Cd., 7710, reads:

"If the consignee of the goods thinks that the condition of the bill of lading issued by any particular steamship line are unreasonable, he can make it one of the terms of the purchase of the goods that the shipper is to send them by some other line.

"If the consignee of the goods regards the bills of lading issued by all steamship lines as unreasonable, he can purchase the goods for delivery in his own country and leave the seller of the goods to make his own terms as to carriage and insurance."

I would add to the above as follows:

Or the Canadian consignee can purchase in the United States the goods which may not be obtainable in his own country, and which he will not purchase in Great Britain owing to what he deems to be an unreasonable bill of lading.

* When Sir Henry Drayton was examined before the Dominions Royal Commission, on transportation matters, as affecting Canada, Mr. W. Lorimer, the representative of Scotland on the Commission, was unable to be present. Mr. Lorimer subsequently stated that he had desired to examine Sir Norman Hill, Secretary of the Liverpool Owners' Steamship Association, on ocean transportation, and asked if the Chief Commissioner, after reading Sir Norman Hill's evidence, would file a memorandum embodying his own views. The article, reprinted herewith, forms the main portion of Sir Henry Drayton's memorandum, as prepared, in response to the request of Mr. Lorimer.

The present bill of lading would appear to be a matter of evolution, and the evidence does not show when the final product first appeared. The fact is, however, that in 1898 Canadian imports from the United States exceeded those from Great Britain by \$42,781,462; while in 1913 imports from the United States into Canada exceeded those from Great Britain by no less a sum than \$297,131,145. In this connection it must also be remembered that, in so far as dutiable Canadian imports are concerned, exports from Great Britain have the substantial benefit of the British preference as against those of the United States.

A Reason for Lack of Tonnage.

Is it not probable that the Canadian importer has adopted the obvious alternative open to him that has been pointed out in principle at any rate by Sir Norman Hill himself, and that one of the reasons of the lack of tonnage on the western trip, attributed by Sir Norman Hill to very different causes, is to be found in the bill of lading itself?

But, according to and as developed by the report and subsequent evidence, the bill of lading is not a matter of very great importance; marine losses and damage claims are becoming steadily less all the time; the whole question is, in any event, merely who insures the goods, the shipper or the carrier; the insurance rates themselves are not a matter of much moment. The report reads, page 20:

"In the same way the rates on cargoes carried to New Zealand have fallen from 22/6 to 7/6, and from Canada from 10/— to 6/— per cent."

The British exporter knows whether the freight rates of 1913-14, with an insurance rate of 6/— per cent., constitutes a serious barrier to his entrance into the Canadian market. As I am advised, however, the rate of 6/— per cent. cannot be quoted as the rate fairly applicable to the Canadian trade, but that a more usual rate is 6/8 per cent. for ordinary risks during the earlier months of St. Lawrence navigation. The insurance rates usually increase rapidly after the 1st of September until the close of navigation, reaching a maximum of 20/— per cent., or over three times the amount quoted in the report. Instead of this insurance question being a negligible one, it is of prime importance and constitutes the greatest disability of the Canadian route.

German Bills of Lading.

It is, of course, obviously in the interest of shippers and consignees that their freights are carried on bills of lading throwing on the carrier to the fullest reasonable extent liability for loss and damage in transit. General traffic is also, in some degree at least, aided by fair, or perhaps generous bills of lading as against bills of lading which largely remove all responsibility from the carrier. Looking at the question broadly, it would also appear to be in the real interests of the British shipowners to issue a bill of lading which would be attractive to their customers.

It is true that in the past the British companies engaged in the North Atlantic trade have entered into conferences with the German lines, so that there has been no competition, at least to the extent that rates are concerned, between the British and German lines in that trade. It is of interest, however, to compare the attitude taken before your Commission by the British Conference Lines with the policies adopted by the

German carriers. The British bill of lading excludes liability under different heads that are very familiar to you, going to the extent of relieving the shipowner indeed from liability for the negligence of his own servants.

The report of Sir Francis Oppenheimer, His Majesty's Commercial Attaché in Germany for the year 1913, at page 22, reads as follows:

"Uniform bill of lading.—After prolong negotiations between the various export societies and the shipping companies, a uniform bill of lading was agreed upon towards the end of 1913. This will prove a special boon to the German exporters, for one of the terms henceforth to be inserted in all German bills of lading is to the effect that any conditions differing from those laid down for the uniform German bill of lading are to be null and void. Where local conditions abroad necessitate certain alterations of the uniform rules such alterations must be written on the face of the bill. The German freighter is henceforth in the widest sense liable for the seaworthiness of his ship and for the negligence of his employees—points which used to be the source of much uncertainty and litigation."

No argument has as yet been advanced, nor can any argument be advanced before your Commission, under which a system can be justified that does not extend to the British exporter conditions of traffic at least as favorable as those enjoyed by his German competitor.

Estimated Profits.

On page 22 Sir Norman Hill gives an estimate of the gross earnings of ships engaged in foreign trade of £60,000,000, with estimated net earnings at £8,000,000. On the face of the statement the conclusions are estimated, but no basis is given showing how these estimates are arrived at, or any data from which they can be checked. For example, the basis of deadweight is lacking, and without information as to the deadweight estimated to be carried, it is impossible to check the estimates.

The estimates, I submit, cannot be accepted. They at any rate appear unreasonable and require full investigation. I take it from subsequent evidence given by Sir Norman Hill, that the estimate of net earnings includes not only dividends but a necessary allowance for depreciation. The effect is, therefore, to include in this net both sets of capital charges and leave the difference between gross and net, or £52,000,000, attributable entirely to operating expenses.

It follows, therefore, from the estimate that the business of the Lines is conducted on an operating ratio of expenses to gross receipts of no less than 86.66. This is a ratio which, with much deference, I believe does not exist, and cannot in fact exist in the light of other statements made by Sir Norman Hill as to economies worked in later years by the operating of vessels of an improved type.

On pages 25 and 26 Sir Norman Hill gives statements of Ocean Freight Rates. It is fair to say that these statements, at least in part, form an important basis of his argument that Canadian freights complained of are not abnormally high. My submission is that these statements of themselves prove nothing, and that no system of comparisons or ratios, including the freight of boats on the one hand of 3,200 tons at one period, and on the other of 18,000 tons, can give anything else but a misleading result if the object of the tables is to show that merely a proper return is enjoyed by the Lines, or indeed if submitted for any other purpose other than historical.

Sir Norman Hill in his evidence states water carriers ought to net 10 per cent. on the cost of the vessel per annum. Of this 5 per cent. is to be profit and 5 per cent. to be applied to depreciation account. A return of 10 per cent. covering both profit and depreciation would appear to me to be only just and reasonable. There is, however, nothing in Sir Norman

Hill's report, able and complete as it is, to show what the boats in the Canadian trade actually earned. After all, the establishment of that one simple question constitutes, one way or the other, an answer to many of the matters at issue. The Conference Liners, having full information on the subject, and although most capably advised and represented, have not answered that question.

Cost of Carriage Decreases.

It is, of course, undoubtedly true that the cost of labor and material has increased so that the cost of a voyage, as a voyage, has advanced; but with the great economies resulting from enlarged vessels and better power, it by no means follows that the cost of carriage per revenue ton has increased. On the contrary, in so far as I have been able to ascertain, it has decreased.

Further, the operating ratio of the boats of the several classes is entirely different. A freight tariff and loading resulting in an absolute loss in the operation of boats of the older and more expensively operated type can show a large and substantial profit as applied to the modern and more economical vessel.

In 1884 boats were operated on the North Atlantic trade of 3,200 tons gross carrying capacity, requiring 1,200 tons bunker coal for the round trip, speed 10 knots an hour, burning 30 tons of coal a day, operated by a crew of 42 men, net profit tonnage 2,000 tons. It cost to operate a boat of this type approximately 20/— per ton on her total deadweight capacity.

In 1890 boats were operated of 4,000 tons gross carrying capacity, requiring 1,200 tons bunker coal, speed 10 knots an hour, burning 30 tons of coal a day, operated by 35 men, net profit tonnage 2,800 tons. The cost to operate a boat of this type fell to 17/6 per ton on her total deadweight capacity.

In 1895 boats were operated of 6,000 tons gross carrying capacity, requiring 1,000 tons bunker coal, speed 12 knots an hour, burning 40 tons of coal a day, operated by 35 men, net profit tonnage 5,000 tons. The cost to operate a boat of this type fell to 15/—per ton on her total deadweight capacity.

In 1900 boats had further improved and were operated of 8,000 tons gross carrying capacity, requiring 1,200 tons bunker coal, speed 12 knots an hour, burning 45 tons of coal a day, operated by 32 men, net profit tonnage 6,800 tons. The cost to operate a boat of this type, before the war, was only 12/6 per ton on her total deadweight capacity, as against the 20/— required in 1884, when Sir Norman Hill's tables commence.

Profits on Passenger Traffic.

Since the operation of 8,000-ton cargo boats, newer types have been instituted of the same freight capacity, but in addition utilizing the upper decks for passenger business, resulting in further operating economies.

The increased earning capacity of such vessels in the two classes of passengers they carry (second-class and steerage) has added enormously to the earnings of the vessels. In good years they carried a trip up to 250 second-class passengers at £10 a head, and up to 1,000 steerage passengers at £5 a head. It has been estimated that the cost of fitting and feeding passengers in the saloon would be not more than £3 per head for the trip, while the steerage passengers would not cost more than £1 per head.

I, of course, do not pretend that the information at my disposal is complete. It is the best that I have been able to get. I believe it to be correct and that it understates rather than overstates the advantageous position of the Lines. In case of dispute, the production of the original voyage books of each vessel will, however, very quickly and properly determine the question.

The conclusion that large economies have been worked, however, is corroborated by Sir Norman Hill. On page 19, he says:

"Not only has the carrying capacity of the British Mercantile Marine been enormously increased, but the cost of carriage has been decreased by the employment of larger vessels and the adoption of more economical types of engines."

At page 24, he says:

"It is also the fact that the improvement in the types of ships employed has increased enormously the trading facilities between Canada and the United Kingdom, while the cost of carriage has decreased very considerably. Thirty years ago the largest vessel sailing between Liverpool and Canada was of 5,395 tons gross register; to-day the largest vessel in the trade is of 18,485 tons gross register. Thirty years ago the voyage between Liverpool and Canada occupied from nine to twelve days. It is now made in six days."

Again, at page 41, in answer to the Chairman's question:

"You have considered harbor improvements and deepening of the greatest importance to the trade?"

Sir Norman Hills says:

"Yes. That lessens the expenses a good deal. The working expenses do not increase as the carrying capacity increases."

On the evidence of Sir Norman Hill himself, economies have been effected, carrying capacities largely increased, and the comparisons made as to relative rates therefore unfair. As a further sequitur it would appear that rates should have been reduced rather than increased.

Canadian Policy and Tariff.

The question of Canadian policy and tariff as advanced by Sir Norman Hill is I suppose as an additional reason for high freights. His report reads on page 27, as follows:

"The freight on grain and flour represent a substantial charge on the value of those commodities, and it is conceivable that an advance in those rates may affect business, but the general policy of Canada has certainly not been to cheapen the export of bulk and deadweight cargoes. Before the adoption of its tariff, Canada was a large importer of the heavy iron and steel manufactures of the United Kingdom, and those cargoes, besides paying a fair outward freight, provided the shipowner with the deadweight he required. On the homeward voyage, the deadweight required was provided by the grain shipped in Canadian ports, which was often carried at merely nominal rates. When Canada ceased to import the heavy iron and steel manufactures of this country, it became a necessity to build vessels that could be sailed without deadweight cargoes, and in consequence the shipowner has now no necessity to carry grain as ballast."

Again, on page 29, his evidence reads:

"Why is that? . . ."

"The cargoes into Canada have been very much restricted. Canada wants to export, but she is not very ready to import, except immigrants."

"So that a tramp steamer does not find freight from England to Canada? . . ."

"Not the bulk of freights; they will not take the heavy iron and steel. I do not know what other bulk freights we have got now that we can send them."

In passing it may be stated that among the most remunerative classes of business that the lines enjoy is that of the immigrants. It was one of the questions first taken up by the Conference Lines, and since it was taken up by them the rates have advanced 100 per cent.

Canada's case, however, does not rest on non-existent traffic, or on what the earnings might have been under different conditions, but on the rates, earnings, and traffic as they are. The statements now being considered have nothing to do with the existing grievances complained of by the Cana-

dian shipper. The argument on this question of tariff is, however, not based on fact, and in this instance the actual facts are capable of easy demonstration.

Canada has not ceased to import heavy iron and steel commodities. On the contrary, her imports have increased from 1884, when the rate statement furnished by Sir Norman Hill commenced, by a percentage running up into the hundreds. The value of iron and steel imports as given in the returns published in 1884 only amounted to \$10,464,227 dutiable and \$3,822,360 free.

In so far as iron and steel are concerned, Great Britain's competitor in the Canadian market is the United States. United States' exporters are not, of course, subjected to any disability from the ocean rates. On the other hand, the high ocean rate, while injuring the British exporter, is of corresponding benefit to the American in the Canadian market.

The official statistics show that Canada does import iron and steel in large quantities, and that for some reason or other the British exporter has not held his own in the Canadian market. The following statement is taken from official statistics:

Total Dutiable Iron and Steel Imports.

Year	Total Imports	From Great Britain	From United States	Excess United States imports over Great Britain
1898	12,901,474	1,924,763	10,653,373	8,728,610
1903	31,127,638	7,348,621	21,375,077	14,026,456
1908	50,436,227	10,273,743	38,657,777	28,384,034
1913	118,613,488	10,394,276	106,471,427	96,077,151

The Conference Lines, well advised as they are, have deemed it necessary in the presentation of their case to submit that the iron and steel imports into Canada have ceased. On the contrary, from 1898 to 1913 they increased more than 900 per cent. Even so far as British exports on dutiable iron and steel are concerned, the movement had not ceased, but on the contrary had grown from \$1,924,763, in 1898, to \$10,394,276 in 1913.

Again, is not Sir Norman Hill in error when, in connection with this iron and steel traffic, he treats the Canadian tariff as limiting the movement?

In so far as iron and steel produced in Canada are concerned, undoubtedly the Canadian producer is benefited to the extent of the tariff. I, however, deal with the \$118,613,488 worth of dutiable iron and steel actually imported into Canada in 1913. The tariff here certainly constitutes no advantage to the American as against the British exporter. On the contrary, owing to the British preference, the British exporter, in so far as his American competitor is concerned, is in a better position with the tariff than he would be if there was none; and for the same reason, so are the Conference Lines. Under preference, the customs dues levied on the American iron and steel are reduced in different instances on the like material from Great Britain by percentages varying from 33⅓ to 50 per cent., and in some instances no customs are collected on the British material.

Free Iron and Steel Imports.

While I have every confidence in the correctness of the above conclusions, there can be no room for any contention as to the effect of Canadian tariffs in so far as articles admitted into Canada free of all duties are concerned. The tariff here can have and has no influence at all. The market is free and the only disability rival producers labor under are those resulting from their own initial costs, marketing methods, and the freights levied on their produce. The statistics on iron

and steel importations admitted free into Canada but confirm the conclusions already arrived at. I again take 1884, the initial year of Sir Norman Hill's statements. In 1884 Canada imported iron and steel commodities free of duty to the value of \$3,822,360. Of this total the United Kingdom furnished \$2,983,024, or approximately 78.043 per cent., and the United States \$827,222, or approximately 21.642 per cent. In 1913 the value of these free imports had increased to \$20,034,876. The percentage supplied by the United Kingdom fell between a percentage of 21.32, disregarding the third decimal, while that of the United States, treated in the like manner, increased to 70.31.

In so far as the Canadian market is concerned, therefore, as to free imports which it would appear to be idle to pretend have been influenced by any Canadian Government one way or the other, the year 1913 finds the positions of the chief exporting countries practically reversed. Some further and other reason must obviously be advanced for this condition than that offered on behalf of the Conference Lines.

Limitations Placed on Heavy Traffic.

On the other hand, it well may be that the conditions of carriage from the Mother Country to Canada have something to do with the declining ratio that Great Britain enjoys in this trade. So far as I have been able to ascertain, some 25 years ago the ocean freight rate on iron and steel was 7/6 per ton of 2,240 pounds. This rate existed for some 12 years, nor was any distinction made in the matter of length of pieces, although I would think it but fair to state that at that time it might well be that all shipments offering were of a convenient length. About 1908 the rate was made 8/—; two years later 10/—; and, subsequently, 11/3. The rate advanced in 1912 to 12/6 and in 1913 to 13/9. Commercial lengths are now frequently 66 and 99 feet.

In order that there may be no misunderstanding as to the burden placed upon this traffic by the Lines, I now reproduce Conference tariffs issued by the Donaldson Line and applicable to the traffic of the summer season of 1913.

[Sir Henry Drayton here inserts a table of rates on iron and steel issued by the Donaldson Line in April, 1913.]

A rate, therefore, on joists up to 15 inches in depth, of 60 feet in length, weighing less than 2 tons, becomes 25/—. Should, however, the length weigh over 4 tons and under 5 tons, the rate becomes 55/— a ton. For rolled and built beams of similar length not over 2 tons, the rate is 32/6 per ton, and if weighing over 4 tons and under 5 tons, the rate becomes no less than 62/6 per ton.

The Donaldson Line runs from Glasgow, and in connection with the freight increase for weights over two tons, I refer to the evidence of Mr. Daniel Shields, of the Clyde Navigation Trust, at page 41. Mr. Shields, after describing the berthage accommodation of the Donaldson Line at Glasgow, states:

"Hydraulic cranes of two to five tons capacity are provided by this Trust for the handling of cargoes."

The ordinary equipment of the steamers of to-day permits the handling of at least 10 tons. The Conference tariffs, therefore, impose heavy penalties on the movement of the heavy commodities. This traffic, described in the evidence as so necessary and beneficial, as a matter of practice and operation, is discouraged by the liners themselves.

Railway Practice—Contrast.

The centre of production of iron and steel in the United States is Pittsburgh. The rail rate, Pittsburgh to Montreal, on beams and girders, is 23.1 cents per 100 pounds, or \$4.62 for the 2,000-pound-ton covered by the Conference tariff. No limit is placed on the weight of any piece, except that imposed

by the freight car capacity, which may be loaded to 55 tons. The rule as to minimum required to secure the above rate and as to long pieces is as follows:

"Girders—otherwise indexed by name, minimum weight 36,000 pounds, when on account of length require 2 or more cars to transport them, the minimum weight for 2 cars shall be 45,000 pounds, for 3 cars 60,000 pounds, for 4 cars 75,000 pounds. (Actual weight to be charged for when the aggregate actual weight exceeds the specified minimum weights.) When more than 4 cars are used the additional car or cars will be considered as a new series."

With the use of the 4-car series thus provided for, lengths of 173 feet can be carried.

To illustrate the effect of this tariff, 8 girders, each weighing 6 tons and each being 80 feet long, can be carried from Pittsburgh to Montreal for \$221.76. The same shipment from Glasgow to Montreal, under the Conference tariff, assuming that the pieces, although 80 feet in length, moved at the excess 17/6-rate applicable to lengths exceeding 55 feet, and assuming further that the minimum excess of 70/— stipulated for pieces over 5 tons was only charged, would amount to \$1,172.80.

The disability is, of course, greater in the rate on pieces of the greater lengths and weights. The tendency is for both length and weight of manufactured structural iron and steel to increase.

Taking a shipment, however, again of 8 girders of only 66 feet in length and weighing but 122 pounds to the foot, the rail rate, Pittsburgh-Montreal, is \$148.80. The ocean rate, Glasgow-Montreal, is \$326.40. This ocean rate is only arrived at on the assumption that the 66-foot piece would be charged the minimum penalty applicable to lengths over 55 feet, and also disregards the 52 pounds each piece weighs over 4 tons, and treats the whole shipment as one of 32 tons only.

The rate disability the English exporter is subject to undoubtedly injuriously affects his business in the Canadian market, instead of the actual advantage he obtains under the British preference—a preference only possible with a tariff.

I should say that the general duty into Canada on rolled iron or steel angles, beams, girders, etc., amounts to \$7 a ton. Under the British preference the rate charged the English exporter is but \$4.25 a ton. On the shipment of 8 beams of 6 tons, referred to, the preference obtainable by the English exporter is \$132, while in the second instance, the preference amounts to \$89.96.

I do not wish to unduly emphasize, however, the difference in rates. In the case of the land movement, the American manufacturer loads the goods on the freight cars and the consignee unloads them. While it is true that with rail switches running into his factory it probably costs the American exporter considerably less so to load on the cars than to truck the material to the dock, and it probably would be more convenient and cheaper for the Canadian consignee to take delivery by railway than at the dock; nevertheless, the railway is not at any cost in respect to loading or unloading, while the liner is. On the other hand, I submit with the greatest confidence, that the point taken by Sir Norman Hill with reference to the iron and steel heavy freights cannot be sustained.

Monopoly and Combination.

Sir Norman Hill affirms that there is no monopoly in the Canadian trade and states that the restrictions such as they are on the employment of shipping in the Canadian trade, result from the Canadian policy and not from the action of the shipowners.

I have already dealt with (perhaps at unnecessary length) the question of "Canadian Policy." Everything that I have submitted in connection with iron and steel imports applies to a greater or less extent on all dutiable imports, in connec-

tion with which the British exporter obtains the benefit of the preference.

Sir Norman Hill's denial of the existence of a monopoly is extended from the Canadian trade to other trades. In his evidence, page 39, he says:

"With great respect, the idea of shipping having become a monopoly and a combine is ridiculous."

The existence of combination and agreement between the Conference Lines, and as a result of which traffic was carried at rates, the minimum of which was fixed and observed by all Conference Lines, has been admitted. A distinction, of course, can very properly be made in monopolies, which may well differ fundamentally.

The shipping companies certainly have no monopoly granted by the Crown, as, for example, in the case of a patent—the Canadian ports are open in their foreign trade to the ships of all nations—there is no Act of Parliament required to build a ship. Artificial monopoly, in other words, monopoly created by law, there is none. There may be, however, other monopolies, as, for example, in the case of combinations of dealers in produce or other commodities of prime necessity to the public. Such combinations are commonly, if not indeed usually, called monopolies. It has been stated that a monopoly exists where all, or so nearly all of an article of trade or commerce within a community or district is brought within the hands of one man, or of one set of men, as practically to bring the handling or production of the commodity or thing within single control, to the exclusion of competition or free traffic therein.

I submit that monopolies exist. First, when based on an exclusive right in a particular trade or any particular traffic. The liners have no such exclusive right, and no monopoly is charged under this head. Second, when resulting from an exclusive, or practically exclusive, control of a trade or traffic, resulting in the exclusion of others from it. It is submitted that a monopoly of this character exists in the trade between Great Britain and Canada.

The majority of the Royal Commission on Shipping Rings found that shipping conferences created a certain kind of monopoly, while the United States Committee on the Mercantile Marine and Fisheries found that the Conference Lines had virtually a monopoly of the line service. These findings are relied on.

In the Canadian trade, the Conference Lines have had for many years an actual monopoly of the line service. So far as the tramp steamer is concerned, it does not offer any real competition. It cannot compete with the Conference Lines. The lines have regular berthage accommodation at the different loading and discharging ports, with permanent staffs. This accommodation of necessity the tramp steamer has not got, and without it is unable to obtain parcel lots and cargo on the western trip. On the eastern trip, although cargoes are available, owing to the fact that the earnings of that trip must cover the cost of the round voyage and that the tramp steamer has no passenger revenue, she can offer no real competition; and her use to the public does not consist in reducing or controlling rates, but simply that surplus bulk cargoes that the lines have been unable or unwilling to look after are carried on the tramp.

Sir Norman Hill very naturally and properly approaches the question from a very different point of view, but would appear, however, to arrive at the same result, although of course, attributing it to different causes. I quote from his evidence at page 29:

"... Is it the case that the individual steamship owner has been replaced by more powerful combinations?"

"Certainly. The size of the ships had grown enormously and the values of the ships. The day of the little capitalist is quite gone. Whether there has been any great

advance in the way of combinations I very much doubt. It is often alleged, but ever since I have been in business there have always been arrangements and understandings in the Canadian trade.

"Has the proportion between the tramp steamer and the liner altered during your experience in the Canadian trade?"

"Yes, I should think the liners have increased everywhere in all trades. In the Canadian trade I think there has been a special increase. I should say that now the only boats that can really live in the Canadian trade are boats which are both cargo and passenger boats."

Whatever the reasons may be, there is no doubt as to the present condition. Lines are operated in concert; and combination in the Canadian trade and competition, except a competition of service which exists more particularly in connection with the western movement, there is none. It has been eliminated by combines of many years standing.

In case there is any shadow of doubt as to this position, may I further point out that the Lines' theory is that rates fluctuate according to the quantity of traffic offering—high when there are accumulations of freight to be carried with a shortage of bottoms, and low when the shipping accommodation exceeds the freight offered. This would appear to be a natural condition in a trade subject to no monopoly and with the shipowners operating in competition.

Your Commission probably has before it the tariffs applicable to the western movement issued by the Conference Lines. In any event, they are printed and can readily be produced. It is a matter of common knowledge, and indeed a matter relied on by the companies as a justification of their position, that the freights moving from Great Britain to Canada are insufficient to give a full, or perhaps a cargo sufficient to insure proper economies in the operation of the boats available.

Yet these rates, instead of being lowered, are raised. For example, the 17/— rate on carpets, applicable in 1909 became, in 1913, 27/6; the 20/— rate on druggists' sundries became 30/—; and the general hardware rate of 20/— became 30/—. These increases are merely illustrative, and further quotations would simply encumber the record.

There is no question but that ocean rates have increased in very large percentages under conditions which would have precluded increases under a competitive condition.

Government Operation.

The whole discussion is predicated upon conditions and practices existing before the war, and I am firmly convinced that, with a situation such as we have had it—with agreements between the carriers—with the absence of competition, a proper measure of sane and constructive Government control is necessary. That of itself, however, will be insufficient to cope with the situation arising on the proclamation of Peace.

On the one hand, there has been a large destruction of mercantile tonnage, made up in part doubtless by new construction, but resulting in the whole in all probability in a largely decreased tonnage. On the other hand, there will exist producing centres glutted with commodities they produce and oversea markets most urgently requiring these commodities.

So far as the Empire is concerned, over and above the tremendous industrial demands on its mercantile marine that will exist, on that mercantile marine will also be thrown the immediate necessity of transporting large bodies of troops and munitions of war to home bases. This of itself will be a tremendous task and will occupy a long time.

Germany will be burdened by no such task, but her steamships will immediately be available for commercial work. Herr Ballin has been reported more than once as stating that it will be found at the end of the war that Germany can mobilize for peace as rapidly as she did for war. With the

whole of the German steamship companies and steamships practically in the hands of Herr Ballin and the German Government, I believe the statement credited to Herr Ballin to be correct.

He is also reported to have said at a meeting of the Hamburg-American Line, that the company's prospects for business at the conclusion of the war were excellent, and that the company during the war was constructing new tonnage so as to be fully equipped to look after the great traffic which then would be available.

Opportunities Will be Thrown Away.

If the control of British shipping at the conclusion of the war reverts entirely to the management of the different companies now controlling it, and is directed towards the earning of the largest immediate dividends for their shareholders, as will be the case, irrespective of the traffic securing these dividends, instead of being controlled and directed by a central authority having a full and intelligent knowledge of world-wide traffic conditions and of the commercial necessities and possibilities of the different parts of the Empire, I am convinced that great opportunities will be thrown away.

The war debts, not only of the Motherland, but also of Canada, Australia, New Zealand and the other Dominions, will be great. The interest is common to all. The resultant war burdens will certainly be eased by the adoption of a policy of ocean transportation which will insure the marketing of the products of the different parts of the Empire in the most opportune and profitable markets, at the earliest possible moment after the conclusion of the war. I believe that this can only be arrived at by the fullest co-operation—the elimination of unnecessary sailings on the one hand and the increase of sailings on the other. It certainly cannot be done by individual company effort or management.

I do not desire to be understood as making any attack whatever upon the company management of the past—I believe it to have been efficient and properly carried on in the interests of the shareholders. The policy of companies, however, is of necessity a company rather than a national policy. As stated in the evidence, page 34:

“We get what we can; and it may sound very brutal, but we cannot help what happens to other people.”

This was the position under former conditions of unregulated company management. But if this principle is to be applied to the transportation system of the British Empire on the close of the war, working as it will in competition with the centrally organized and intelligently directed operation of German boats, carrying out as they have in the past the German national policy of trade expansion, guided by an intelligent and far-seeing Government control, it must prove insufficient.

Let Admiralty Continue in Business.

To meet the emergency, I suggested that the British Admiralty, who are probably the largest transporters of men and materials in the world to-day, will continue in the transportation business after the war, advised as they ought to be by those found to be the best posted as to the necessities and possibilities of the Empire's commerce and traffic. I am confident that the Conference Lines themselves can supply some such men.

While in the past conditions have permitted ocean transportation to be carried on with the prime consideration of the shipowner always in view, I am convinced that, with conditions as they will exist at the close of the war, in view of the necessities of the Empire, the interests of the carrier must be subordinated to those of commerce and our necessary industrial development. It does not appear that there can be any logical objection to the use by the Admiralty, or any other

State agency that may be adopted, of German ships in the proposed service.

The conditions that have to be faced are those entirely of Germany's own making. In the first instance, by her sudden and unprovoked attack on the world's peace and liberties, and, secondly, a decreased merchant marine tonnage, not only of belligerent but also of neutral nations, the result of her wholly illegal and brutal submarine policy.

German ships to-day lie rusting in neutral harbors, merely owing to the power and activities of the British Navy. They are still German to-day, not by reason of any strength or virtue of the German nation, but merely owing to the laws of neutrality—broken and unobserved as they are by Germany whenever she conceives her interest to demand it—the outlaw is entitled to no benefits under that law that he himself repudiates, and the elements of justice would indeed be lacking in any peace treaty which does not recognize the work of the British Navy; which does not take into account Germany's unprovoked attack on peaceful and inoffensive merchant ships, passengers and seamen; and which does not, as a small measure of justice, at least award all German ships in neutral harbors to Great Britain.

NOTE OF WARNING SOUNDED.

Bank of Commerce Issues an Optimistic Report, but its President and General Manager Call for More Economy.

The report of the Canadian Bank of Commerce, together with the addresses of the President, Sir Edmund Walker, and the General Manager, Mr. John Aird, give Canadians much food for thought. The figures regarding industrial and trade conditions in Canada and the United States are of special value, coming as they do from the compilation of the regular reports of the bank's officials stationed throughout this country and that to the south.

It is shown that the foreign trade of Canada has made a gain of 285 millions as compared with the year ending 31st March, 1915. This gain is almost all due to the value of the exports, the increase in the imports being only 32 millions.

Securities Returned.

An estimate of the foreign trade of the United States furnished by the New York agent of the bank places the excess of exports over imports from August, 1914, to September, 1916, at \$4,158,000,000. This is said to be almost equivalent to the amount of United States securities held abroad before the war, and it is estimated that by the end of September securities of all kinds had been returned to the value of \$2,400,000,000, so that only \$1,700,000,000 remained abroad. Of this remainder the proportion which can be made available for British war finance is too uncertain to form a basis for an opinion of any value. It has been said, states the President in his address, that about ninety per cent. of the present exports from the United States arises from war requirements. If this is even approximately correct the vast additional increase in wealth if the war continues much longer can be imagined, and the extent of the collapse in trade if it does not.

The reliance of Canada for the placing of her securities is now transferred from Great Britain to the United States and to the greatly enlarged market at home. During the year, out of a total of the value of \$303,715,875, \$102,967,055 were sold in Canada, \$192,748,820 in the United States, and only \$8,000,000 in Great Britain.

Need for Thrift.

Though a great increase in the prosperity of the Dominion is shown in the figures advanced by the President and the General Manager, the need of great caution and thrift is dwelt

upon. It is only by the exercise of a spirit of thrift and economy hitherto unknown to the people that Canada can do her share in winning the war. In this regard it is pointed out that the total deposits in Canadian banks on the 30th of November last amounted to \$1,521,349,000, as compared with \$1,288,985,000 at the same date in 1914; an increase of \$232,364,000.

In the Canadian Bank of Commerce the deposits for the year showed a satisfactory growth, the increase being \$35,373,000. In this regard it is pointed out that Canada will not fail for men, difficult though enlistment may be; she will not fail to make or procure war supplies, but if she fails, says the President, it will be because the people have wasted on unnecessary things the money that would have won the war. The man or woman who works hard at making shells may take much comfort at helping to win the war, but the man or woman who, in addition, saves a part of the present high wages and buys a war security, or helps a bank to do so, has helped twice, and the second kind of help is most vital. The manufacturerers of the United States will make war supplies for money. Canadians are doing better only if they supply them on credit.

Banks' Roll of Honor.

But little has been done in the year just closed in opening new branches and agencies, the number of these being 376, only two more than in the previous year. Up to the end of November 1,207 members of the staff of the bank had enlisted, and of these the names of 296 had appeared in the casualty list, 84 having been killed in action.

Mention is made of the offer to the Italian Government during the year of the facilities of the bank for receiving subscriptions to the war loan of that country from its citizens resident here.

The number of shareholders continues to increase, says the report of the General Manager. At the date of the closing of the books there were 6,648, as compared with 6,341; an increase of about 300, principally in the Provinces of Ontario, Quebec and Nova Scotia.

THE KARA SEA ROUTE.

Access to Central Siberia by this Channel of Communication may Prove of Importance to Canada.

Attention is directed by L. D. Wilgress, Canadian Trade Commissioner at Omsk, Siberia, to the impending visit to America of Jonas Lied, managing director of the Siberian Steamship, Manufacturing and Trading Co., Limited, with whom he hopes that Canadian manufacturers will get in touch. Mr. Lied's company have successfully organized trading expeditions to Central Siberia by way of the Kara Sea and the Yenesei River, during the past four seasons, and possibilities of further developments in this direction are likely to be important.

"This year," says Mr. Wilgress, "only one steamer was used, but some 2,500 tons of goods were shipped into the country. The company anticipates sending a much larger expedition next year, and it is partly on business connected with the coming expedition that Mr. Lied is visiting America.

"Although I have not yet had the opportunity of making Mr. Lied's acquaintance, I have talked over the question of Canada's participation in future expeditions with Mr. G. Rosenberg, the company's manager for Siberia. This gentleman states that they would be willing to send a ship over to Canada provided a full cargo of goods suitable for this market could be obtained. The Kara Sea has assumed importance since the outbreak of the war by reason of the congestion of goods at Archangel and Vladivostock. Another great advantage to this route is the duty-free clause on certain articles

imported by way of the Yenesei River. The articles exempted from duty include such Canadian specialities as wire; pipes; steel in various forms, including steel rails; manufactured and cast iron; carpenters' and coopers' wares; shovels, pitchforks, rakes, etc.; hand tools, and machinery of various kinds, including agricultural machines.

"I hope that our manufacturers may succeed in sending goods to Siberia under the present difficult conditions of trade, since it would be a great advantage, if our products were known and connections established, when normal trade is resumed after the war. In this connection the Kara Sea route may prove to be of value to the extension of Canadian trade with this part of the world."

FINE PROGRESS RECORDED.

Annual Report of Royal Bank of Canada Discloses Great Advances Made in Bank's Position.

During its last fiscal year, which ended on November 30 last, the Royal Bank of Canada reports the greatest strides in its history. New records have been established from year to year, but 1916's achievement has surpassed them all. Some idea of the expansion the Bank has enjoyed during the year under review may be gathered from the statement of assets. These show for 1916 a total of \$253,261,427, as against \$198,299,123 for 1915, and approximately \$179,000,000 for 1914. A gain of over \$55,000,000 in a year is a remarkable showing, and will prove surprising even to those who anticipate big results. Credit for a portion at least of this noteworthy gain must be attributed to the developments following the establishment of the Bank's chain of branches in the West Indies and South America.

It is gratifying in any bank statement to observe the steady growth of interest-bearing deposits. In the case of the Royal Bank of Canada, these enjoyed a substantial gain for the year, being up from \$117,519,300 to \$140,862,119. Non-interest bearing deposits increased from \$37,456,997 to \$59,365,396, so that total deposits enjoyed a gain of nearly \$50,000,000 during the twelve-month.

Earnings made a substantially better showing than in 1915. During the latter year profits amounted to \$1,905,576, or 16.48 per cent. on the average paid-up capital. In 1916 they crossed the two million dollar mark to \$2,111,307, at which level they represented 17.87 per cent. on capital. With the balance carried forward from 1915, there was available for distribution a total of \$2,787,779, of which \$1,417,207 was paid in dividends; \$100,000 was transferred to officers' pension fund; \$250,000 was written off bank premises' account; \$118,226 went as war tax on bank note circulation, and \$50,000 was contributed to the patriotic fund. The balance carried forward amounted to \$852,346, as compared with \$676,472 a year ago.

NEW BRUNSWICK INDUSTRIES.

A bulletin of the St. John Board of Trade has this to say regarding the progress of certain industries in the provinces: "The output of the St. Stephen shoe factory for eleven months is placed at \$309,000, with an annual pay roll of \$62,000. The confectionery plant has manufactured about \$1,200,000 during the year, an increase of about \$300,000 over the previous year. The soap factory, edge tool plant, and fertilizer works have each had a good season. But for a fire which destroyed the greater part of the plant of the wood-working factory, its output would have reached \$225,000 this year. The cotton mill at Milltown has turned out 250,000 yards of cotton cloth weekly, of a yearly value of \$1,250,000. Like satisfactory reports come from Moncton, Fredericton, Woodstock, Sackville, and other industrial communities in the province."



General view of the Quaker Oats plant before the fire. The fire originated in the basement of the dry house, which is the building immediately to the left of the stack in the picture

THE LESSON OF THE QUAKER OATS FIRE

By W. H. SLATER

THE disastrous fire which occurred on Dec. 13th in the premises of the Quaker Oats Co., at Peterborough, forms a useful, if costly, lesson in fire prevention.

The headquarters of the company are in Chicago, with branches at Akron, Ohio; Fort Dodge, Iowa; Morris, Ill., and other American cities, besides a mill in Saskatoon, Sask. The Peterborough plant was established about twelve years ago, and consisted of flour mill, rolled oats mill, warehouse and elevators. The capacity of the flour mill had been gradually raised since establishment from 500 to 1,500 barrels per day. All the buildings in Peterborough were constructed according to plans and specifications prepared by the company's chief engineer at the headquarters in Chicago. The total insurance carried on the destroyed plant amounted to about \$1,200,000. The plant was one of the largest of its kind in America, employing over 550 hands.

The fire was caused by explosion in the dry house, which had the effect of incapacitating the sprinkler system and the pumping equipment. The story of one of the employees is that, on smelling smoke, he took off the cover of the attrition mill, noticed that the contents were on fire, replaced the cover and ran to give the alarm. Before, however, he could succeed in escaping, the explosion occurred, which injured him so severely as finally to result in his death.

The efforts of the fire marshal to obtain a full and correct account of the disaster have been greatly handicapped by the death of at least two of the most important witnesses and the severe injury of others. He found it impossible to complete the investigation, which was adjourned until a number of witnesses are sufficiently recovered to enable them to give evi-

dence. The total death-roll now amounts to twenty-two. The attrition mill is a machine for grinding the husks into cattle feed. The grinding is done by two large plates of corrugated metal, placed less than one-sixteenth of an inch apart and revolving in opposite directions at an immensely high velocity. It is obvious that a small particle of grit or flint finding its way between the plates would result in a spark and probably set fire to the ground husks, which are of an extremely inflammable nature. This danger is, of course, fully recognized, and extreme care is taken, by means of magnets and fans, to eliminate the possibility of foreign matter finding its way into the machine. The husks to be ground were first passed over a series of strong magnets, which attract any particles of metal; they afterwards passed in front of a fan, which blew them towards the mill, allowing heavier particles such as stone and grit to drop out. The system was considered as perfect as possible. It is practically certain, however, that the explosion originated from a spark caused by foreign matter or by static electricity generated by the friction of the plates.

The fire marshal is of the opinion that more than one explosion took place, the burning material finding its way up the bucket elevator into the hull bin, and there causing another explosion.

The explosion, or explosions, blew out the north and east walls of the drying building, and probably the majority, if not all, the fire doors between the drying building and the six-story mill adjoining at the south, thus immediately spreading the fire through both buildings. This would account for the fact that half an hour after the first outbreak the mill was practically gutted. Although the dry house was of concrete construction, it



Progress of the fire through the mill, after the collapse of the dry house

was seen, when the east wall was blown out, that the contents of every floor were burning fiercely. The north wall of the dry house, in falling, buried the boiler house and a small fireproof pump house on the other side of the boiler house. The location of these buildings will be observed in the illustration of the plant as before the fire.

The east wall broke a six-inch automatic sprinkler riser and buried two post indicator valves in the yard which controls the supply to the building. The result was that a considerable delay occurred before it was possible to turn off the water and eliminate the tremendous water waste from the broken riser. With the six-inch riser broken and fire on all floors of the mills at once, which would result in practically all of the sprinklers in this building fusing, the water pressure became totally inadequate for effective fire-fighting streams from the hydrants. The only way of stopping the waste finally was to shut off one of the eight-inch city mains, which resulted in three yard hydrants and two city hydrants also being put out of commission.

At about 10.50 a.m.—thirty-five minutes after the first alarm was given—the dryer building, the mill and the cleaning mill were practically destroyed, the metal-clad elevator was ablaze, and the oat storage tanks had collapsed. By noon these buildings, together with warehouses Nos. 1 and 2, were in ruins, all walls having collapsed. The heat generated by the fire was so intense that a warehouse building of standard reinforced concrete, fitted throughout with wired glass windows and stocked to the ceiling with finished products, was entirely destroyed. The fire brigade did their utmost to save this building, but the wind, blowing from the east, placed it in the direct path of the flames, and the efforts of the men were unavailing.

The obvious conclusions to be drawn are:

1. Pump houses, valves and hydrants should be located so as to eliminate the possibility of their being buried by falling debris.

2. Any process containing an explosion hazard should be isolated, as far as possible, from the main plant. A mill of the character of the one described should be treated as a



Ruins of Warehouse No. 1 and packing department, with fireproof warehouse in the rear

powder mill; that is, installed in a building of light construction and as far away as possible from the main buildings.

The fire also proved, what has long been contended by insurance underwriters, i.e., that a sprinkler equipment is of doubtful value where it is exposed to the possibility of being destroyed by an explosion. Before equipping any cereal mill with a sprinkler equipment, it is of the utmost importance that processes involving a dust explosion should be removed to a position from which an explosion could not seriously affect the protective equipment.

PIG IRON AND STEEL IN 1916.

The Dominion Department of Mines has received from the producers a record of the production of pig iron and of steel ingots and castings during the first eleven months of the year, which together with estimates for December show a probable production of pig iron in Canada during the twelve months ending December 31, 1916, of 1,171,727 short tons (1,046,185 gross tons) and a probable production of steel ingots and direct steel castings of 1,454,124 short tons (1,298,325 gross tons), of which 1,423,485 short tons were steel ingots and 30,639 short tons were direct castings.

The production of pig iron in 1915 was 913,775 short tons, and of steel ingots and castings 1,020,896 short tons, showing an increase in the production of pig iron in 1916 of about 28 per cent. and an increase in production of steel ingots and castings of over 42 per cent.

The 1916 production was greater than that of any previous year, the second largest production of pig iron having been 1,128,967 short tons in 1913, and of steel ingots and castings 1,168,993 short tons, also in 1913.

Of the total production of steel ingots and castings in 1916, about 43,790 short tons (39,098 gross tons) were made in electric furnaces. In 1915 only 61 short tons were reported as having been made in electric furnaces.



Appearance of the smouldering ruins on the night following the fire

THE EXPORTATION OF ELECTRICITY

An instructive statement on the relation of a possible coal embargo by the United States to a curtailment of Canada's export of electric energy

By ARTHUR V. WHITE

Consulting Engineer Commission of Conservation of Canada

(Reprinted from The Canadian Engineer)

THE people of Canada, and especially of Ontario, should understand and fully realize the extent to which they are dependent upon others for their coal supply, and understand also their increasingly great dependence upon hydro-electric power as well as its relationship to coal.

Both the United States and Canada, as well as many of the European countries, are now experiencing a shortage of coal supply with consequent increases in price. The present, therefore, is an opportune time to review the Niagara power situation. In the course of this survey we shall consider a number of statements made by various authorities.

In November, 1916, the District Attorney in charge of the investigation held at Buffalo respecting the coal situation, asked one of the witnesses:—

"If the Canadians put an embargo on power when there is a power shortage, should we not put an embargo on their getting coal when there is a shortage here?"

Ontario Has No Coal.

In 1891, Mr. E. B. Borron, in making his report to the Ontario Government on the lakes and rivers, water and water powers of the Province of Ontario, drew special attention to the fact that Ontario has no true coal. Mr. Borron stated:—

"Thus it will be seen that in respect of fuel and consequently of steam power, Ontario occupies on this continent a very unfavorable, one might say, unenviable, position, as compared with the Maritime Provinces and British Columbia, and with many, if not most, parts of the United States, and still worse as compared with England, Belgium and other great manufacturing countries in Europe."

That the time may come when the United States may deem it expedient to reserve her supply of coal for her own use, is not impossible. Dr. George Otis Smith, Director of the United States Geological Survey, commenting upon the world's supply of coal, and with particular reference to the reserves in his own country, states:—

"This glance at the world's reserves of coal shows plainly not only that the United States leads all other countries in production, our annual output being nearly 40 per cent. of the total, but also that it possesses the greatest reserves. Yet in respect to no mineral is there greater need to emphasize the folly of exporting the raw material. Let us keep our coal at home, and with it manufacture whatever the world needs."

United States Advised to Keep Its Coal.

Dr. Smith advises: "Let us keep our coal at home and with it manufacture whatever the world needs." Is it without significance that such a policy should even be suggested?

Examples are not wanting to show that when countries have recognized the fact that certain of their natural resources were essential to their national welfare, policies have been adopted designed to stop or curtail the exportation of such natural commodities.

Consider, for example, the phosphate rocks so valuable as agricultural fertilizer. A few years ago, when the United States Government perceived that they would require the products of their own phosphate beds, the phosphate lands of the west were formally withdrawn from private entry, thus retaining these deposits of fundamental importance to the future of the nation, as its property. Commenting upon the

phosphate situation, President Van Hise, of the University of Wisconsin, stated:—

"Indeed, by the statesmen of foreign civilized nations, exportation of phosphates would be regarded as unthinkable folly."

and, to use his own words, he urged for the United States:

"that there should be a law which prohibits absolutely the exportation of a single pound of phosphate rock."

Canadian Electric Energy.

However, it is not necessary to go outside of Canada to find advocates of this doctrine. It has been stated time and again that the growing industrial and other needs of Canada require that there no longer be exportation of Canada's electrical energy to the United States, without acceptable *quid pro quo*. This policy of Canada's retaining her electrical energy for her own use, is that which stimulates one like the District Attorney to ask the very pertinent question above quoted:—

"If the Canadians put an embargo on power when there is a power shortage, should we not put an embargo on their getting coal when there is a shortage here?"

As we have just seen from a foregoing quotation, Dr. Smith goes even further and definitely counsels, "*let us keep our coal at home and with it manufacture whatever the world needs.*"

Ontario and Canada may yet require *every unit of electrical energy* just as much as the United States may yet require *every pound of phosphate rock*, or may find it expedient to retain *every pound of coal*.

Coal vs. Electric Energy.

In an article dealing with the "Exportation of Electricity,"* the writer in 1910, made the following statement, which is equally true to-day: "Certainly the people of Ontario and Canada are in better circumstances to maintain a supply of heat and power if their water powers, including their full share of international water powers, are reserved to themselves and not permitted to be exported, except upon terms and conditions which will conserve absolutely the present and future interests of the citizens of Canada. Not only would the water powers of Canada provide, to a certain extent, a substitute for the coal supply of the United States as a means of furnishing light and heat and power, but control of these water powers would secure a basis upon which negotiations for coal could be conducted in a possible day of need. Canada would be in a position to exchange, if need be, part of her electric energy for part of the coal supply of the United States. It is obvious, however, that if the United States interests should control both the coal and the water powers, the situation of Canada would become exceedingly grave."

In the present condition of world affairs no demonstration is needed of the truth of the statement that the keen competition of large commercial interests too frequently constitutes a most serious menace to the peace of nations. There have been times when, on account of commercial rivalry, international relationships have become so strained that exercise

*The Exportation of Electricity. By Arthur V. White, in *The University Magazine*, of October, 1910.

of a nation's force of arms has been enlisted on behalf of the demands of large private or corporate interests.

United States Advantage Over Canada.

Some years ago, when the relations of the United States with Canada were under discussion before the "Select Committee on Relations with Canada of the United States Senate," Mr. Joseph Nimmo, Jr., addressed the Committee with respect to the possibility of Canada dealing with her transportation facilities in such a manner as would adversely affect interests in the United States using Canadian transportation, and stated that:—

"In the entire range of our Canadian relationship, from Halifax to Vancouver, the United States holds an overpowering advantage over Canada, and at every point. The suspension of the transit trade would be of comparatively small disadvantage to the United States, whereas it would be utterly disastrous to Canada. . . . It is high time for the people of this country to appreciate the fact that their national government holds a preponderance of commercial power on this continent as absolute as the preponderance of its military power, and to demand that those who are charged with the affairs of government shall adopt such measures as shall prevent any interference by a foreign power with the course of the development of our domestic or foreign commerce."

In its official opinion rendered comparatively recently, the Public Service Commission of the State of New York referred to the possibility of Canada taking back electrical energy which had been utilized in building up United States industries, as follows:—

"We have nothing before us but the suggestion that the Dominion of Canada may, at some future time, forbid this exportation. This Commission must assume that international relations affecting so important a subject as the means of continuing great industries which have grown up in reliance upon the use of this imported power, and, as well, the interests of the Canadian producing companies themselves, have become fixed and subject only to such changes as will fully protect the great commercial and industrial interests and rights now served by this power brought from Canada. The time has long since passed when governments proceed ruthlessly from pure national rashness or anger to destroy the settled accepted commercial relations and formally vested rights of persons and corporations."

Canada Wants to be Fair.

In connection with the exportation of electricity, Canada certainly does not desire to assist in creating any circumstances which would even tend to invite a possible carrying out of any such policy as is suggested by the language in the opinion delivered by the Public Service Commission of the State of New York, or in the Address, just quoted, as delivered at Washington before the Select Committee of the Senate on Relations with Canada. Such policies are foreign to the aims and aspirations of the peoples both of the United States and of Canada.

From the foregoing statements, it will be perceived that there is an increased demand in the United States for electrical energy. Let us note more specifically how keenly United States interests desire to possess larger quantities of electrical energy for use in the upbuilding of industries and communities.

The following testimony will demonstrate the views thus entertained. Lieutenant-Colonel J. C. Sanford, reporting on January 6th, 1913, upon the subject of Niagara power, to the chief of engineers, United States Army, states:—

"There is no question but that Niagara power will soon be utilized to the fullest extent allowed by governmental restrictions. *If advantage of the power generated in Canada cannot be had on the American side, manufacturers will be attracted to Canada by this cheap power, and the industries of this country will suffer accordingly.* The effect of present restrictions on the importation of power is becoming noticeable. . . . Manufacturers at present contracting for additional Niagara power must locate, and are locating, in

Canada. It, therefore, seems advisable to permit immediately the importation of Niagara power to the fullest extent permissible under the law, and, other things being equal, to grant permission for its importation to the company or companies which will make the earliest use of such power."

Canada Would Get Industries.

The former Secretary of War, Hon. Henry L. Stimson, before the Committee on Foreign Affairs, recently stated that:—

"The investigation which has been made by the engineers indicates that Canada, if we do not take it, will use the entire amount that the Treaty permits in a very brief time, so that whatever effect any restrictions on importations would have, would not protect the Falls for more than a very brief period, and it would result in giving to Canada, very possibly, a large number of industries which otherwise would be established on this side of the Falls."

When Representative Chas. B. Smith was speaking on behalf of his Bill, he submitted, before the Committee on Foreign Affairs, a letter from a leading citizen of Buffalo, in which it is stated:—

"Every restriction on the importation of Canadian power should be at once removed. Electrical power is a raw material and should be free."

The Sub-Committee on Niagara Falls Power, appointed by the Committee on Foreign Affairs, in its report on one of the Cline Bills, states that it had been urged for its attention:—

"That the Canadian companies were rapidly increasing their sales, and would very soon take the full amount of water they were entitled to and the United States ought to get what power it was able to now."

and they add:—

"If the advancement in the development of power on the Canadian side increases for another year or so—and it is not apparent to the Committee that it will not—then the Committee concluded that it was proper to take as large an amount as it could get for consumption in the villages, cities, factories and homes along our border."

No Restriction on Importation.

Representative Chas. B. Smith, of the State of New York, in conversation, stated to me that he favored no restriction on the importation of electricity, because if it was good for the United States to have this commodity he thought it was advisable to get as much as possible, and permit it to come into the country without any restriction. This view of Mr. Smith was amply reflected in certain Bills of his which provide for no restriction.

In the State of New York there is a ready market for additional electric energy. The opinion, delivered on February 12th, 1914, by the Public Service Commission of the State of New York, records that:—

"There is a large shortage of electric power in western New York, with a strong demand for greater supply which is not being met by existing companies. . . . We are using all the power made on the New York side, and all that has been brought from Canada, and the demand for more power in western New York is insistent and being urged with great force."

It is also stated that Niagara Falls power produced in the United States is so far from supplying the needs of portions of the State of New York, that, if the importation of power were prohibited, it "would plainly amount to a great public calamity."

Relief is Wanted in United States.

When the demands in the United States for more electrical energy are such as those set forth by the foregoing quotations, it is not strange that public organizations and other interests have been prompted to urge action on the part of the Federal Government of the United States to relieve this situation.

Various organizations, such as the Water Power Investigating Committee of the New York State Legislature, the Hydro-Electric Association of Buffalo and other places, the special committee of the Committee on Foreign Affairs of the United States House of Representatives, the United States War Department and others, have been studying the problem with a view to at least alleviating the present circumstances.

In the United States, the problem at Niagara is recognized as a national one, and of late special emphasis has been given to the fact that no federal policy of "war-preparedness" can successfully be carried out without increasing the producing capacities of plants at Niagara, which plants are either manufacturing munitions of war, or materials and commodities which are essential to the production of war munitions.

In Canada, efforts put forth by the Hydro-Electric Power Commission of Ontario,* by the Commission of Conservation, Ottawa,* by the Unions of various Municipalities, by Boards of Trade, and other organizations, have resulted in the conservation for Canada of a large amount of electrical energy which doubtless would not otherwise have been utilized. The activities of the Hydro-Electric Power Commission have very materially increased the consumption of Canadian electricity.

Review of the Situation.

It is not possible within the confines of the present article to do more than briefly indicate some of the chief factors which enter into this problem of the exportation of electricity. Before concluding, however, it will be profitable very briefly to explain a few matters respecting which the public at large, including a large portion of the public press, is in comparative ignorance.

With the factors which we are about to mention held in mind—and not otherwise—one will be able, intelligently, to interpret the course of future discussion or legislation respecting power development at Niagara.

For many years the supply of Niagara waters for power purposes was regarded by the public as practically inexhaustible. Companies in the United States, however, had obtained power concessions which, if put into operation, would have drained Niagara dry. The United States Federal Government recognized the danger of this situation.

The International Waterways Commission, consisting of members appointed by the United States and by Canada, had originated in 1902, following a recommendation in "The Rivers and Harbours Act" of the United States. In 1905 this Commission was requested to report upon the general conditions obtaining at Niagara Falls, with the request that there be co-operation between both countries to the end that proper and adequate steps be taken to prevent further depletion of the Niagara waters.

The Burton Act.

This Commission conducted its investigation, co-operatively with the United States War Department and subsequently made its report. Certain recommendations with respect to the preservation of Niagara and the amount of water to be diverted on the United States side, were enacted into law by *The Burton Act*, this Commission having completed its work, disbanded about a year ago.

The Burton Act of June 29, 1906, was "For the Control and Regulation of the Waters of the Niagara River, for the Preservation of Niagara Falls, and for Other Purposes." It was regarded chiefly as a temporary measure. It limited the diversion of water on the United States side to a rate not exceeding 15,600 cubic feet per second; and under special permits the *importation* of electrical energy from Canada into the United States, could be had to an aggregate amount of 160,000

horse-power. *The Burton Act* continued in force until 1913, when it lapsed by limitation.

Closely following the passage of *The Burton Act*, the Government of Canada, on April 27, 1907, passed an *Act to Regulate the Exportation of Electric Power and Certain Liquids and Gases*. "The Fluid Exportation Act," as it is called, among other features, provides for the taking out each year of a license permitting the *exportation* of electricity to the United States; and for a possible export tax not exceeding \$10 per horse-power per year.

Thus *The Burton Act*—a United States measure—regulated the *importation* into the United States, while the Canadian measure, *The Fluid Exportation Act*, regulated the *exportation* from Canada.

The passage of *The Burton Act* was furthered through the influence of such organizations as the American Civic Association, the American Scenic and Historical Society, the Colonial Dames of America and others, assisted, also, by efforts of Canadians.

The Burton Act recommended the opening of negotiations between the President of the United States and the Government of Great Britain, for the purpose of regulating and controlling the waters of the Niagara River and its tributaries. Negotiations were opened, and, in due course, the *Boundary Waters Treaty* was signed at Washington on the 11th of January, 1909, and ratified on May 5th, 1910. *The Burton Act* and the Treaty, for a time, were co-existent and the Act was effective until its expiration.

This *Boundary Waters Treaty* specifies nothing with respect to the importation or exportation of electricity, but it provides for a diversion of "not exceeding in the aggregate a daily diversion at the rate of 20,000 cubic feet of water per second for the United States" and of 36,000 cubic feet per second for Canada.

More Power Released.

Until quite recently the United States War Department, which exercises federal jurisdiction over Niagara power matters, had not issued permits for more than 15,600 cubic feet of water per second, although it has had the right to issue permits up to the Treaty quantity of 20,000. A statement was made in December, 1916, that, on account of the great power shortage, the Secretary of War had decided to release, by permit, the unappropriated water up to the 20,000 cubic feet per second.

The Province of Ontario has allotted about 30,000 cubic feet of water per second to provide for the full installations of the existing power companies at Niagara. The balance of about 6,000 cubic feet per second, is to be utilized by the proposed Chippawa development, which, it has been stated, is to be made by the municipalities of Ontario through the agency of the Hydro-Electric Power Commission.

At the present time there is installed on the Canadian side a nominal plant capacity of about 425,000 horse-power and on the United States side about 260,000 horse-power.

In the United States, federal jurisdiction over Niagara, by virtue of its being regarded a navigable stream, is exercised by the War Department. The Secretary of War issues the permits to the different companies utilizing the water, and the Corps of United States Engineers are entrusted with the enforcing of the various regulations.

Canadian Control.

In Canada, the control of the waters of Niagara for power purposes is under the jurisdiction of the Province of Ontario. The exportation of electricity is under the control of the Federal Government. The Department of the Interior, Ottawa, issues the annual licenses and, through the agency of its Gas and Electricity Inspection Branch, provides certain supervision of the operations of the power companies.

*Consult the *Annual Reports* of these Commissions.

The licenses issued a year ago by the Department provided for the following export quantities: Electrical Development Company, 35,000 kw.; Ontario Power Company, 45,000 kw.; Canadian Niagara Power Company, 55,000 kw.; a total of 135,000 kilowatts, or approximately 181,000 horse-power. It is probable that these quantities will be materially reduced in the next licenses issued.

The carrying out of the terms of the Boundary Waters Treaty, as well as adjudication upon certain matters of dispute between the two countries arising out of the use of boundary waters, is now vested in the *International Joint Commission*, which tribunal, in many respects, corresponds to the former International Waterways Commission. Its functions and powers, however, as set forth by the Treaty and more fully defined by Rules of Procedure, are broader. Thus, the means of adjusting differences between the two countries are available through the instrumentality of this Joint Commission, and the Boundary Waters Treaty. The Treaty is based upon the *Doctrine of Equal Benefits*. Each country is entitled to receive its full share of the benefits derivable from the use of one-half of the waters which would naturally flow in the Niagara River. If each country receives the share to which it is entitled there can be no just ground for contention or dissatisfaction.

Having, now, knowledge of the various factors already discussed, including the International Waterways Commission, the Burton Act, the Fluid Exportation Act, the Boundary Waters Treaty, the International Joint Commission and of the functions exercised by the Secretary of War, Washington, by the Department of Inland Revenue, Ottawa, and by the Province of Ontario, with its Hydro-Electric Power Commission, and other organizations, one is in a position to give intelligent understanding to events which may arise in connection with this very important subject—the Exportation of Electricity.

NOW OWN FOUR PLANTS.

Canadian Milk Products, Limited, Acquire and will Remodel Large Cheese and Butter Factory.

Announcement was made last month by Canadian Milk Products, Limited, Toronto, that they had purchased the plant at Hickson, Ont., of the Hickson Cheese and Butter Manufacturing Company, and would remodel and convert it into a modern milk powder plant. A contract for the alterations and additions has been let to the McKinney Lumber Company, Woodstock, who will do the work at a cost of \$60,000. The Hickson plant makes the fourth owned by Canadian Milk Products, Limited, to be devoted exclusively to the manufacture of milk powder. It is stated that a good part of the heavy demand for milk in powder form has come from the construction and lumber camps, where its use has been most satisfactory.

CLAY PRODUCTS CONVENTION.

Canadian National Clay Products Association will hold Annual Meeting in Hamilton this Month.

This year's annual convention of the Canadian National Clay Products Association is scheduled for January 23, 24 and 25, at the Royal Connaught Hotel, Hamilton. The programme of business and entertainment gives promise of being an attractive one. Among the papers listed for delivery are the following:

"The Practical Operation of Pyrometers to the Burning of Wares," by J. P. Goheen, sales manager, Brown Instrument Co., Philadelphia; "Burning by Pyrometers vs. Burning by Guess," by James de Von, Thwing Instrument Co., Toronto;

"Success in a One-Horse Tile Yard," by John T. Miner, Kingsville; "Burning Tile With Natural Gas," by Aaron Hill, Hill Bros., Essex; "Technical Education," by George L. Sprague, principal, Hamilton Technical and Art School; "Burning Clayware in Producer Gas-fired Kilns," by A. F. Greaver-Walker, Sun Brick Co., Toronto; "Labor-saving Devices in a Soft Mud Brick-yard," by J. F. Aten, Arnold-Creager Co., New London, Conn.; "Clays in the Vicinity of Hamilton," by Joseph Keele, B.Sc., Chief Engineer, Ceramics Department, Mines Branch, Ottawa, etc.

The entertainment features include a concert on the evening of January 23, one item of which will be an illustrated lecture on "The Value and Intelligence of Our Birds," by Jack Miner, tile manufacturer, Kingsville; a trip through some of Hamilton's leading industries on the morning of January 24, and an annual banquet in the evening, at which Judge Riddell will speak.

DEATH OF HUGH McCULLOCH.

The Passing of One of Canada's Leading Manufacturers.

In the death of Mr. Hugh McCulloch, president of the Goldie and McCulloch Co., Limited, who passed away at his home, Sorn House, Galt, on Jan. 8th, Canada has lost one of her leading and most highly esteemed manufacturers.

Mr. McCulloch, who was in his sixty-first year, was born in Galt on Sept. 7th, 1856. He was educated at the Whitby Grammar School and Upper Canada College, at the completion of which he served an apprenticeship in the shop of which his father, Mr. Hugh McCulloch, Sr., was then president. Practically his whole life has been spent in furthering the interests of the firm of which he was a member and the industrial interests of the community in which he lived.

When the company was incorporated in 1891, and took over the business of the firm of Goldie and McCulloch, he was appointed secretary-treasurer, which position he held until he was elected vice-president in 1898, assuming the presidency on the death of his father in September, 1910.

Mr. McCulloch was closely associated with various other manufacturing concerns in Galt, having been, at the time of his death, vice-president of the Galt Malleable Iron Co., Ltd., also of the Galt Art Metal Co., Ltd., and a director of the Gore Mutual Fire Insurance Co., and for many years a director of the Galt Gas Light Co.

DOING AWAY WITH WAITERS.

The one great draw-back to quick service in restaurants where one waits upon himself is the fact that many patrons are apt to loiter in front of a counter and thus delay those who are awaiting their turn. To eliminate this feature a shop restaurant has recently installed a 45-foot cotton belt conveyor, which is electrically-driven. As each employee approaches the moving belt he picks up an aluminum tray on which an attendant places bread or biscuits, and places the tray on the conveyor belt. From that moment he must keep moving at the same rate as his tray, which is carried along in front of the long counter in back of which are the attendants who place on the tray the dishes that are ordered by the employee. A railing running a short distance in front and parallel to the counter prevents anyone from getting into the line at any other place but the beginning. Thus there is no loitering or confusion, and the system operates with marked precision.—*Scientific American*.

The Champion Spark Plug Co., of Toledo, Ohio, have opened a factory and office at 14-16 Sandwich Street West, Windsor.

THE PROBLEM OF HEALTH INSURANCE*

By FRANK S. DRESSER

H EALTH insurance is not a new matter abroad. Bismarck proposed the first compulsory health insurance law in Germany in 1883, as a sop to the Socialist party. Austria and Hungary followed in 1888 and 1891, Luxemburg in 1901, Norway in 1909, Serbia in 1910, Great Britain in 1911, Russia and Roumania in 1912, and the Netherlands in 1913. Systems other than general compulsory insurance are found in Belgium, Italy, France, Spain, Sweden, Denmark and Switzerland.

These countries have come to the conclusion that health is a national asset, and that the welfare of the State demands that the illness hazards among that portion of the community of slight financial responsibility must, so far as possible, be diminished, and the loss, when it falls, distributed through the whole community.

A belief so universal must have its effect here, however much we think our conditions differ from those of Europe, in the existence of the need and in the peculiar difficulties to be met because of our constitutional guarantees and because of the competitive burden on the States which first adopt the law.

The Need to Be Met.

The need to be met appears from the following data which, though the sources of information are meagre and were gathered before the recent rise and costs of living, seem to be agreed upon by the proponents of the measure and are sufficient for our present purpose.

Of the wage-earners in the principal industries of the country who are heads of families,

One-quarter	earn less than	\$400	a year,
One-half	" " "	\$600	"
Four-fifths	" " "	\$800	"

and less than one-tenth earn as much as \$1,000 a year.

Of the women workers eighteen years old and over employed in the principal industries,

One-quarter	earn less than	\$200,	and
Two-thirds	" " "	\$400	a year.

The total family income of wage-earners in the principal manufacturing and mining industries has in recent years been between \$700 and \$800, but that means that one in ten or twelve families had an annual income of less than \$300, that one-third had less than \$500 and over one-half of the families had less than \$750 a year.

Dependent on Other Sources of Income.

More than one-half the families of wage-earners are dependent upon other sources of income than the earnings of the family head, and these sources are most frequently earnings of wife and children and the payments from boarders and lodgers.

Investigation seems also to show that the working man's family of average size, that is, father and mother and three dependent children, has required an income of \$800 to maintain adequate subsistence, and of this \$650 goes for the necessities of rent, food, clothing, heat and light, leaving for all other purposes, including medical care, insurance and the like, about \$150.

In such families, if all goes well, the surplus between income and necessary expenditure is almost non-existent, and

the savings, if any, are slight; but if things go ill from any cause, as the family income falls, the expenditures for rent and food and clothing must be diminished, with the result that the provision is inadequate in most industrial communities for reasonably healthful living.

One of the commonest causes of reduction in income or increase in expenditure, or both, is the illness of the wage-earner or his dependents.

Loses Nine Days a Year.

The employee in this country apparently loses nine days a year through illness, and as there are some 30,000,000 of wage-earners the wage loss alone, at two dollars a day, is over half a billion dollars, and the medical care and drugs cost about a quarter of a billion more. This enormous loss is for the wage-earner himself, and does not include the illness of his family.

These data apply to the industrial wage-earner, but in hardly less degree they apply to all employees and to the self-employed in similar economic conditions, the small farmer, the shopkeeper, the journeyman, the home worker, are subject to the same hazards; and even the professional classes, the doctors, lawyers, clergymen and teachers, since the average earnings in these professions are well under one thousand dollars a year, run the same risks and suffer the same deprivations.

This illness loss means to all people of slight resources a reduced standard of living, and consequently a greater susceptibility to disease. It is an efficient cause in recruiting the ranks of the casual worker and the inefficient. It fills our hospitals, jails and poorhouses, and drains the resources of our charities; for illness is the chief cause of poverty, and the poverty stricken are by far the fairest marks for disease.

But the wage loss and expenditure are not the only need. Medical advice, because of its cost, is not obtained except as a last resort, and frequently too late, and even when secured is too apt to be careless or unskilful. It has been said—I do not doubt with truth—that "there is perhaps a distance of a quarter of a century between the present status of medical science and that of medical practice among the poor."

Better Enforcement of Regulations.

The notable progress of the last few years has accomplished much in preventing disease, and has blazed the way to further efforts. But much still remains to be done, and not the least is in strengthening the hands of the Government and in requiring adequate enforcement of the regulations adopted.

Another remedy lies in the mobilization of medical practitioners and resources, not only in the line of preventive medicine, but of more extensive and general provision for early, proper and adequate treatment and advice. While the recent progress along these lines has been marked not only in preventive medicine, but in the increase of general dispensaries and hospitals, as well as special institutions for children's diseases, for tuberculosis and the like, the conditions surrounding the general practice of medicine remain much the same. This problem of more effective organization and distribution of medical aid rests primarily with the medical profession itself, whose wisdom, ethics and public spirit must find the solution.

However much these remedies have been or may be developed in various communities, yet at the end of all possible

*An address delivered before the National Machine Tool Builders' Association, New York.

care in these respects the vicious cycle of poverty and disease will still remain, and the misery occasioned by it still cry for help.

This help cannot be rendered by existing methods.

Public pauper relief and private charitable aid are limited and spirit-breaking.

The attempts among the workers themselves to distribute their loss by means of industrial insurance, membership in trades union relief funds, fraternal societies, or establishment funds, are insufficient, since, being purely voluntary, they reach only a small portion of the workers, and those the thrifty and less needy ones.

Some other method, therefore, must be found.

Methods Adopted Abroad.

In foreign countries one of these three general forms has been adopted:

1. State subsidy to the voluntary insurance organization, whose cost is borne about one-third by the State and the rest by the insured workers themselves, of which Denmark is a type.

2. Compulsory insurance, with freedom to choose the insurance carrier, and the cost divided between the employer, employee and the State, which is the English plan.

3. Compulsory insurance in a closely prescribed insurance carrier under State supervision at State expense, with the cost divided between the employer and the employee, which is the German system.

It has been computed, arguing from German and British experience, but realizing the almost total lack of necessary data, that the cost of the sickness, medical and funeral benefits, including administration costs, but excluding, apparently, any contribution to reserves and the quite considerable sums which employers must, in the first instance, pay for their accounting department, would be between the limits of three per cent. and five per cent., say about four per cent. of wages.

If we apply this four per cent. of wages to a single State, say Massachusetts, assuming the average wage to be \$570 a year, and that there are about a million persons who would be insured, the cost to Massachusetts is about twenty-three million dollars annually, of which the workman would contribute nearly nine millions, the employers nine millions, and the State about five millions—an increase of our present State tax by over forty per cent.

Passing on the Cost.

In spite of the common belief that the State and the employer have, just under the treasurer's desk, a hidden stock of gold which, if it can be got at, will prove inexhaustible, these contributions will not all remain where they first fall, but be passed on. The State's contribution, as well as its payments as employer of State and municipal employees, is raised by the general levy upon all taxpayers. The employer's contribution, plus his increased State and municipal tax, will become an item in his cost of production to be charged, so far as possible in the competitive rivalry of the several States, in the price of his product and paid by the consumer, or else be saved by greater economy, as, for example, reducing wages. A great portion of the consumers are the insured workmen and their families, who thus, besides their own direct contribution, will indirectly bear in the increased cost of necessities or in lesser wages a large proportion of the contribution of the employers and the State. In this, therefore, as in so many similar proposals, it would seem that the class which it is hoped to benefit is simply set to chasing its own tail again.

Workers Bear the Burden.

It is by no means the employer who needs to object to the cost, if cost is material, for when the enactment becomes

general it will bear less hardly upon his business than upon the workers and the rest of the community at large.

While in workmen's compensation the hazard and the premium rise and fall together, the rate remaining fairly constant, yet in health insurance, as the hazard and the rate rise, the premium, or rather the possibility of paying the premium, falls. This difficulty can be avoided only by treating health insurance from a strict actuarial standpoint, undertaken unsuccessfully in England and entirely disregarded in the proposed bill of the American Association for Labor Legislation.

Thus to define and separate the compensation and the health systems is not only logical, but is practical, and rests upon inexplicable grounds of responsibility. For work accidents and work disease the industry, and neither State nor worker, is primarily responsible, and therefore the industry pays, and neither State nor worker directly contribute. But for non-work accidents or disease the responsibility, so far as there is any, rests with the community at large and with no single class. The industry is no more responsible than the landlord, the State than the individual.

The layman knows that successful business is necessary to the community, and that the requisite capital and effort must be attracted by fair returns. But he feels, each year more strongly, that these returns must not come out of the necessities and the disasters of the individual.

He knows that somewhere is the point of balance between fair returns on the effort and the investment, and reasonably safe and healthful conditions for the worker. He wants to see that balance attained, and is willing to pay the price.

The Point of Balance.

The point of balance lies somewhere, but no real or scientific attempt is made to find it. Toward it the labor agitator, the social worker, the economic theorist, works his stumbling way; but the one who knows, who can really find it—the employer—too often either obstructs or stands aside.

The time for choice has come. Shall we permit these crude and uncertain legislative regulations to continue? Shall we agree that industry is responsible for certain preventable inducements to disease, and inflict upon ourselves and upon the community the rule-of-thumb penalty of health insurance; or shall we of our own motion study our conditions and set about to cure their evils, whether they be evils in our mills or in the general health conditions of our towns?

More Information Needed.

That matter is difficult and costly for the great majority of mills, but it is comparatively simple and inexpensive for a great industry. In the list of committee meetings I note many dealing with the technique of business, but none with its health or accident risks. These things are of immediate influence in your costs and your efficiency, and are yearly approaching standardization. A committee could determine the limit of effective production of a lathe-man, a clerk, a fireman; could discover the mill conditions of dirt, ventilation and the like; could furnish information and suggest remedies; even six months' watch of your sick workmen would turn up a mass of data to prove what is now guesswork.

The cost of acquiring such information would be small, and even the expense of remedies would seldom be great, and I gather from some mills that are now undertaking it that there are satisfactory returns on the outlay. Such knowledge possessed may prevent much evil legislation, and such knowledge applied may not only reduce accident and sickness loss, but increase profitable production.

Progress along these lines by industrial employers themselves; progress by wise State and municipal regulations

which shall reach all classes; closer study by the medical profession of their peculiar problems, seem to me far preferable and to offer greater hope than to embark on the uncharted sea of health insurance.

But if we must embark, let us know our port.

THE SCARCITY OF LEATHER.

Bookbinders are Compelled to Adopt a Substitute in Binding Law Reports.

A recent report from Charleston, W. Va., states that, owing to the scarcity of leather for bookbinding, the attorney-general has announced that, with the consent of the Court, he will ask the Legislature for permission to use binding other than leather, which is the material required by law, for the binding of the reports of the Supreme Court of Appeals.

No doubt many bindery men are likewise feeling the pinch. Others are not. The latter are using in many cases a substitute. The increasing cost of skivers and buffings for bookbinding was too much for them, so book-finish fabrikoid was given a trial. It is different from any material ever used for this purpose.

It is the result of a practical binder's experience, who made a careful study of the subject, as well as the manufacturing process. The book-binding process of manufacture is different from that used for other grades of any other artificial leather.

Some of its advantages and features are, that it has the leather effect in any grain or color, and costs less, comes in rolls, and thus eliminates waste in cutting, no unused corners or edges. It has just the needed degree of pliability, not too soft to work well in a case-making machine, nor too hard to stand the bending of the joints. It is water-proof and washable. This is a strong point, for books naturally get dirty, but if bound in leather substitute the covers can be washed. Besides, it is vermin-proof, and cannot be destroyed in that manner.

It is made in several grades, so that any kind or size of book can be bound in it. Some of the largest bookmakers, blank book and loose-ledger manufacturers have adopted it. They find that it can be used for work for which artificial leather would have been thought impossible but a short time ago.

THE STANDARDIZATION OF INDUSTRIAL PLANT BUILDINGS.

Every manufacturer of a standardized product knows what standardization has done for him, says a writer in the *Scientific American*. It has absorbed the cost of preliminary experimentation and development. It has reduced individual jobs to aggregate production, and made it possible to apply to that aggregate the advantages of capital and equipment. It has made a better product at less cost; and it has brought output and manufacturing costs to an approximately stable basis by permitting the purchase of materials when prices are low, to be manufactured during dull seasons for the future.

It has been with a view to securing the numerous advantages of standardized design and construction that a firm of industrial builders has evolved a line of standard factory buildings, despite the fact that such a feat seemed at first impossible of commercial realization. Yet analysis of the accumulated experience of more than 40 years in factory building all over the country showed that seven types of buildings would accommodate a great variety of industries.

So it was that the firm of builders proceeded to standardize the seven types, fixed as to unit cross-section, but vari-

able as to length, in multiples of the distance between columns. Each design has been made to utilize standard materials which are readily procurable at low cost and utilizable without waste. Structural steel, lumber, cement—the materials most likely to show big advances in price—have been contracted for when the prices were at their lowest. Construction units, such as steel columns, roof trusses, beams, sash, have been pre-fabricated and held in stock at the firm's depots, ready for quick assembly on the factory owner's land.

It is said that the standardized factory buildings are the irreducible minimum of good construction—every needless detail eliminated, every essential retained. They are claimed to represent a country-wide average of the best engineering practice and purchasing power. The construction is good and allows for maximum daylight, ventilation, and floor space at minimum expense. Pre-designed, pre-fabricated, bought at low cost and carried in stock subject to the factory owner's order, the standardized buildings can be quickly and economically erected not only for immediate needs, but for future additions as well.

STORAGE OF SOFT COAL.

In a recent bulletin of the National Fire Protection Association, useful advice as to the storage of bituminous or soft coal is presented by the Underwriters' Bureau of the Middle and Southern States.

"Every year," says the bulletin, "a number of fires are reported due to spontaneous ignition of piles of soft coal, stored either in cold storage buildings or in piles outside. This year there seem to be more fires from this cause than usual. It may be that the unsettled business conditions, both at present and in prospect, have led manufacturers and others to lay in a larger supply of fuel than is their usual custom. If this is the case, and a large amount of coal is stored, careful consideration should be given to safe-guarding the property against fire originating in such storage. The storage of soft coal involves a distinct and unavoidable hazard. As safe-guards we can suggest the following. Other points may perhaps occur to the property owners themselves:

1. Storage should be kept if possible well away from the main buildings of the plant. Under no circumstances should it be piled up against a frame building.
2. If outside space will permit, the piles should be made low (not higher than 12 feet) and of large area, rather than of small area and piled high.
3. If wet coal is received, it should be dumped around the edges of the pile, or in some location where the air can get to it freely, and where large quantities of other coal will not be packed on top of it.
4. If large amounts are stored, it is a good plan to insert wrought iron pipe 2 or 3 inches in diameter into the piles as they are built up. The lower ends of these pipes should be at different heights from the ground throughout the piles, and probably one 2-inch pipe to every 400 square feet of surface would be ample. This arrangement allows air to circulate freely through the coal pile, and is a great aid in preventing spontaneous ignition.

The pipes should preferably be perforated, and it is a good plan to lower a thermometer occasionally through one of them to get a temperature reading from the centre of the pile.

John Coughlan and Sons, Limited, are completing arrangements for assembling the necessary plant and erecting the gantries for the construction of the three steel steamers, 8,800 tons gross, recently contracted to be built for Norwegian interests. Their shipbuilding plant will adjoin their main steel shops on False Creek, Vancouver, B.C.



TRANSPORTATION



By J. E. WALSH

NEW CAR FERRY SERVICE.

Line Across Lake Erie has Proved of Service in Reducing Time and Relieving Congestion.

On Oct. 20th last there was inaugurated by the Toronto, Hamilton and Buffalo Navigation Company, which is practically the Toronto, Hamilton and Buffalo Railway Company, a new car ferry service across Lake Erie, between Ashtabula Harbor, Ohio, and Port Maitland, Ontario. The purpose was to handle freight traffic between the following territories:

From the New York Central main line, Erie, Pa., and west to, and including, Elyria and South Lorain, Ohio, and the Oil City and Youngstown branches, and from Pittsburgh and Lake Erie Railroad stations to Canadian Pacific Railway territory in Canada, now reached through the Buffalo gateway; also to Michigan Central Railroad stations in Canada east of St. Thomas and London, inclusive.

From New York Central stations on the main line Erie, Pa., and west to, and including, Toledo, Ohio, and the Oil City and Youngstown branches, and from Pittsburgh and Lake Erie Railroad stations destined to stations in Canada located on the Toronto, Hamilton and Buffalo Railway and Canadian Northern Railway (St. Catharines Div.)

Class and commodity tariffs naming through joint rates via the Niagara frontier between points mentioned above have been supplemented, adding the Toronto, Hamilton and Buffalo Navigation Company as a participating carrier, which will make the present through rates applicable via this new car ferry route. In addition to this tariffs have been published to and from Port Maitland on such commodities as are now handled on a combination of local rates via Black Rock. The car ferry route will handle carload traffic and cars with less carload shipments with a minimum of ten thousand (10,000) pounds.

The new route, which is well illustrated in the accompanying map, has already proved of great service in reducing the time in transit of certain raw materials coming from the United States to Canadian manufacturers, and it has also been of great assistance in relieving the congestion which has existed more or less during the past year at the Niagara frontier. At the present time the service is confined to the New York Central and Pittsburgh and Lake Erie railways.

SPECIAL AGENTS FOR PLACEMENTS.

Railway Board has Required Railway Companies to Appoint Men to Follow up Orders for Placement of Cars.

Many complaints having been made by members that serious delays were being experienced in placing cars after orders had been issued, representations were made recently to the Dominion Board of Railway Commissioners for some measure of relief, with the result that the board has required the Grand Trunk and Canadian Pacific Railway Companies to appoint a special agent for the purpose of following up all orders for placement of cars. The memorandum issued by the board on Jan. 10th reads as follows:

"In order that the present congestion may be relieved as soon as possible and traffic conditions again placed on a proper basis, co-operation between shippers and consignees and railway companies is essential.

"It is not necessary to refer to the results of delays in loading and unloading cars, which have already been fully discussed.

"It is desired now to emphasize the matter of delays in terminals, having reference to the period between the time when a car arrives and when the car is spotted for unloading. It is a railway service, and there have been many delays in performing it.

"To these delays the railways' answer is congestion, resulting not only from traffic, but from delays of consignees in giving orders for placing cars for delivery. In order to obtain the best results, cars ought to be placed in order as and when received. While this is impossible, it ought to be the aim of everyone to obtain

this result as nearly as possible. Cars unduly held for placement orders in some instances necessitate many unnecessary shunts, so that cars for which orders have been received can be placed. Delay in this regard adds materially to the congestion of the terminal, and cannot be attributed to the railways.

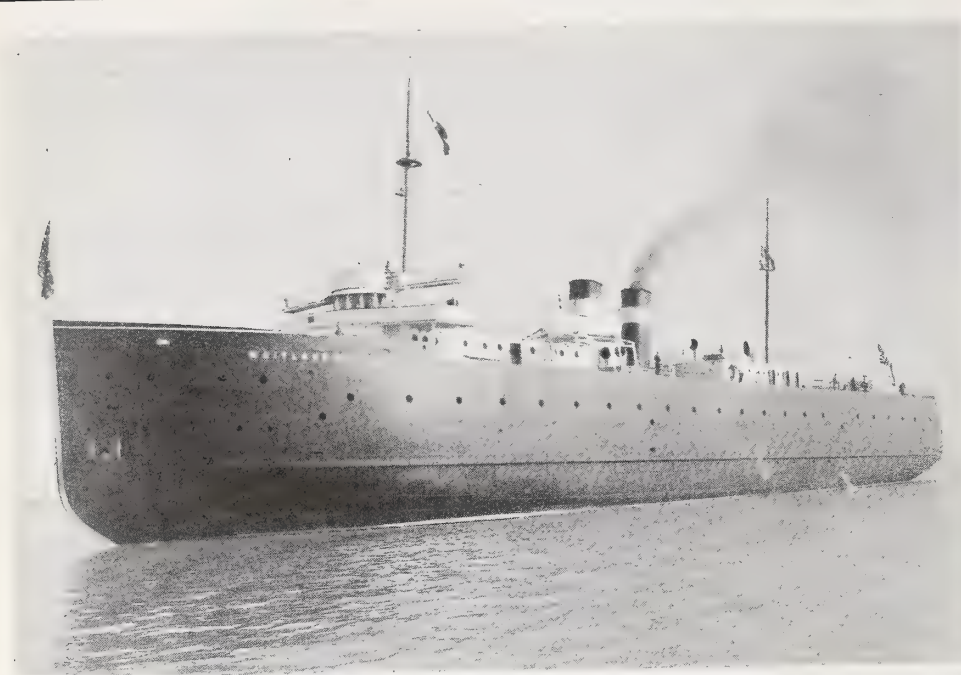
"The board find that both railway and consignee delays still exist in this connection. The board has required both the Grand Trunk and Canadian Pacific Railway Companies to appoint a special agent for the purpose of following up all orders for placement of cars, with a view of seeing that the orders for placement, after being given, are carried into immediate effect.

"Consignees will materially assist in relieving congestion by giving immediate placement orders.

"Lists of cars held for placement orders and submitted by the Canadian Pacific alone show that on Jan. 8th there were no less than 152 cars which had been held in Toronto yards for a period over five days waiting orders for placement. It is hoped that this obstacle to proper and efficient terminal service will be immediately removed."



Connections established by inauguration of new car ferry service across Lake Erie



THE NEW CAR FERRY "MAITLAND No. 1"

This vessel with a capacity of thirty-two loaded freight cars is now plying across Lake Erie between Ashtabula and Port Maitland

CURTAILMENT OF PASSENGER SERVICE.

Order of the Board of Railway Commissioners which Aims to Relieve Freight Congestion.

Members of the Association will read with interest the statement issued by Sir Henry Drayton, chief commissioner of the Dominion Board of Railway Commissioners, on traffic congestion, which resulted in the recent cancellation of a large number of passenger trains in Ontario. The chief commissioner has been giving close personal attention to the serious question of congestion, and his efforts to bring about relief in this way should be commended. His statement on the situation reads as follows:

"The matter of traffic congestion has been anxiously considered for some time past. In so far as the fact of congestion is concerned there is no room for doubt. Coal and coke shipments have been delayed to a serious, and in some instances to an alarming, extent; the proper supply of raw materials to munition factories has been interrupted; and the movement of grain from the North-West, which is much required, not only by the grain-producing territory in the West, but as well by the consuming eastern centres, to say nothing at all of the overseas' demands, which must be met, has been interfered with.

"The grain movement from the West has been limited to some extent by the movement into and out of the Eastern territory and storage facilities therein, and has also in no small measure been injuriously affected by a shortage of box cars and by a shortage of men, and, to a lesser extent, of locomotive power.

"The causes of congestion are not altogether a railway failure, but include an irregular loading movement overseas, resulting in an uncertainty in the railway movement, and consequently congestion of traffic of itself in excess of the traffic ordinarily offered on Canadian lines.

"Over and above all this, the situation is rendered the more acute by reason of the fact that, owing to the financial and traffic conditions obtaining in 1914, and for a portion of 1915, the railway companies had not ordered equipment, which has now become necessary, and later were unable to get it, speaking generally, except at largely increased prices on deliveries at an early date.

"Again, over and above all this, the congestion became more marked, in the first instance, on the lines in American territory, with the result that traffic which otherwise would have been routed on American lines was routed via Canadian lines and offered in large quantities before protective embar-

goes went into force. The result is a traffic congestion at all points at the border, both on the Canadian and American sides, and at a large number of the divisional points and at all large terminals.

"The imperative duty of the board is to see, in the first instance, that this country fails in no regard in supplying materials necessary in the prosecution of the war. This, of course, means that the transportation required by the Imperial Munitions Board from the different factories producing munitions or materials required by the Empire and its Allies must be properly and efficiently supplied. It also means that the full movement of grain and flour required both by Great Britain and by the Allied nations be fully and completely maintained.

"In like manner it is the duty of the board to see that the freight movement of the necessities of life for our own people and raw material required for our export trade, on which depends so much in the matter of exchange and the financial standing of the country, is not allowed to suffer.

"The board has done everything possible to expedite the movement of these commodities with the equipment and competent men now available for freight service. No more can, at the moment, be done in this direction; the railways are using every man available and every engine fit to use owned by the companies or which they have been able to rent for this purpose.

"The question now that the board has to decide is as to whether the movement already referred to as being so necessary should continue to suffer, or whether, on the other hand, engines and men now used in the passenger business ought to be released and put into the freight service.

"In my opinion there is no room for doubt as to what ought to be done. Convenience and comfort on the one hand must be sacrificed to necessity on the other.

"The companies have been advised that the freight movement must be increased and the passenger movement curtailed to the full extent that that movement can be curtailed and the necessary communication between different districts maintained.

"Circulars Nos. 138 and 139 issued by the board, requiring ten days' notice to the board and to the public of changes in passenger service, will be suspended until further order. It is necessary that this should be done, in view of the direction to the railway companies to forthwith cut off all unnecessary passenger movement and to increase the facilities of the freight service.

"It is quite true that not all of the passenger locomotives can be effectively used in the freight service, but many of them can, however; and, apart from the question of locomotives, the crews will become available and the supply of railway men, competent and efficient, directly increased in the proportion that the passenger service is reduced. Over and above all this in the public interest in view of the coal shortage existing, the large quantity of coal consumed in passenger service ought to be curtailed as much as possible.

"More effective service can be given in the mechanic and locomotive shops of the companies, and the freight equipment be better maintained and made more efficient than it is to-day, with a reduced passenger service. There will also be more room in the yards, and a more free and expeditious movement of freight trains will become possible.

"In my view the board cannot well at the present moment order the companies to remove any specific trains. The details of the different passenger movements are much more familiar to the companies than they are to the board, and in the reductions that must be made the companies will have to see that every section of the country at least has the necessary passenger movement both in and out, although this may mean the carrying on of some trains not of themselves remunerative and the cancellation of trains which may be remunerative to the companies.

"The chief congestion is to be found at the frontier and on the section between Hamilton and Toronto. Three companies are directly interested in the passenger movement here—the Grand Trunk, Canadian Pacific, and Toronto, Hamilton and Buffalo Railway Companies. The territory is one requiring undoubtedly a good passenger service. Probably each and every company will be able to show that every train operated in this district is operated at a profit. It is, however, absolutely necessary that at this, the most congested point, the companies must lose their passenger revenue and the public be inconvenienced until the present emergency is past. There are now forty trains operated daily over the territory, that is, twenty into and twenty out of Toronto. In view of these circumstances a radical cut in this service must immediately go into effect.

"This district must be supplied with coal and raw material, not only owing to its own necessities, but also owing to the fact that in it are situated a large number of munition factories now in danger of being closed.

"In my view direction ought to be given immediately that out of these forty trains sixteen must be cancelled, the companies to select out of the total those trains which can be cancelled with the least possible public inconvenience. The mere factor of company revenue cannot be made a controlling factor.

"After a careful review of the situation I am further of the opinion that the Canadian Pacific ought to and can rearrange its service so that a saving can be made of some twenty-six engines and crews, the Grand Trunk thirty-five, and the Canadian Northern twelve.

"The reductions which are now proposed in the passenger service, entailing as they do a considerable loss of passenger revenue in some cases to the companies and inconvenience to the general public, are merely tentative. As and when the congestion from which the country is now suffering, and which probably will continue to a greater or less degree until the opening of navigation, is removed, the service must be restored.

"All companies must use all suitable equipment and men released from the passenger service for the transportation of freight."

MUST SUPPLY COAL CARS.

Board Issues Order Making it Obligatory for Companies to Supply Cars for Movement of Coal.

In connection with the car shortage in the west for coal transportation, and the complaints of the Cardiff and Drum-beller Collieries of the refusal of the Canadian Northern and Grand Trunk Pacific Railway Companies to supply cars for the loading of coal destined to points on the lines of railway of other companies, the Board of Railway Commissioners has issued the following important order:

"Upon investigating the complaints and the coal situation generally in the West, and the reports of the chief operating officer of the board, and in pursuance of the powers vested in the board under Sections 30, 45, 59 and 284 of the Railway Act, and of all other powers possessed by it in that behalf:

"It is ordered that all railway companies subject to the jurisdiction of the board be, and they are hereby, required and directed:

"(1) According to their respective powers and to the full extent that cars are available for the purpose, to supply cars for the movement of coal as and when required, not only to points on the originating line of railway, but also to points on the other lines of railway.

"(2) For all movements requiring transportation over more than one line, the company that enjoys the longer portion of the haul shall supply the cars, and in case such company is unable to supply the cars, then the other company, although only obtaining earnings for the movement over the shorter portion of the haul involved, shall supply the cars; but in such case shall be entitled to be paid by the company enjoying the longer haul a per diem charge of \$1.25 for each and every car so supplied, instead of the usual per diem charge and any increases thereof that may be made less than the said sum of \$1.25, the said charge to run from the time such cars leave until they are returned to the line of the owning company.

"And it is further ordered that railway companies without sufficient equipment shall forthwith make the necessary changes in flat or live-stock cars, in order to provide for the present emergency and to enable them the better to carry out the provisions of this order.

"This order to be effective from October 1st to March 31st in each and every year."



Congestion of Freight Cars is one of the most serious transportation problems of the day in Canada, and in this picture a good idea is given of how cars can accumulate

T A R I F F

By J. R. K. BRISTOL

To Manufacturers Who Contemplate Engaging in Export Business

Are you aware that you have the privilege of practically duty free materials for manufacturing for export? Full information on this matter can be obtained from the Customs Department, Ottawa; or from the Manager, The Tariff Department, Canadian Manufacturers Association, Toronto.

BOARD OF CUSTOMS DECISIONS.

Several Important Rulings are Handed Out by the Board.

Lacquer thinners containing alcohol ruled to be dutiable under tariff item 220. Rate of duty 60% ad valorem, plus the war tariff.

Conduit steel pipe, called "Sheraduct," per sample, declared to be dutiable under tariff item 399. General tariff rate 35%, plus the war tariff.

Insulated hair felt, per sample, declared to be dutiable at 25%, plus the war tariff.

ORDERS IN COUNCIL.

Three Orders have been Passed bearing on Exportation of Various Goods.

An Order in Council has been passed which permits the exportation of phenacetin and acetyl salicylic acid to foreign countries.

An Order in Council has been passed which lifts the embargo against exports "to all foreign countries in Europe and on the Mediterranean and Black Seas, other than those of France, Russia (except Baltic ports), Belgium, Spain and Portugal," of:—

Tinned meats and extract of meat;

Bladders, casings and sausage skins.

An Order in Council has been passed which prohibits the exportation to all destinations abroad, other than the United Kingdom and British possessions, of:—

Rags of linen, or of linen and other articles combined.

NEW ZEALAND.

Prohibition on Importations of Soap except from the United Kingdom and the Colonies.

The New Zealand *Gazette Extraordinary* for September 18, 1916, contains a notice prohibiting the importation into New Zealand, save with the consent of the Minister of Customs, of soap manufactured in or exported from any country other than the United Kingdom and British colonies and possessions.

Note.—A similar prohibition is now in effect in Australia.

MATERIAL FOR PUBLIC WORKS IN NATAL.

Preference to British or Allied Goods Recommended in a Resolution before the Durban Council.

The Department of Commercial Intelligence has been informed, by the courtesy of the London agents of the Durban Municipality, that at a recent meeting of the Durban Town Council recommendations by a committee of the Council that the following resolutions be submitted to the Natal Municipal

Association for consideration and adoption, was adopted by the Council and effect has been given thereto:—

1. (a) That every Natal Municipal Council and Local Board be asked to affirm the principle that all goods and materials purchased out of the public funds should be the produce of British or allied countries, and that such a condition shall be inserted in all specifications for the supply of goods or materials, unless it can be shown that such goods can only be purchased from neutral countries.

(b) That every Natal local authority be asked to furnish to the Secretary of the Natal Municipal Association, for transmission to the Right Hon. the Prime Minister, a return of those goods which it has been customary to purchase from enemy or neutral countries, with a view to the information being forwarded to the Union High Commissioner in London, for publication for the information of British manufacturers.

2. That the Natal Municipal Association be recommended to submit resolutions (a) and (b) to the next meeting of the United Municipal Associations of South Africa, and that that association be urged to impress upon its constituent authorities in the Cape, Transvaal and Orange Free State Provinces, the desirability of acting in the direction indicated in those resolutions.—*Board of Trade Journal*, London, Dec. 7, 1916.

A USEFUL HINT.

Manufacturers Should Mark Goods for New Zealand "Made in Canada."

On account of the growing desire for goods manufactured in the British Empire, which exists in Great Britain and in all the colonies, Canadian exporters would do well to mark all goods manufactured in this country, "*Made in Canada*." In this connection the following clipping from the *Board of Trade Journal* will be instructive:—

"The British Trade Commissioner in New Zealand (Mr. R. W. Dalton) writes that it has been pointed out to him that British manufacturers do not make sufficient use of the description 'British made' on the goods they supply. In a market such as New Zealand, where there is a keen desire to purchase British goods whenever possible, such a description would have a strong selling force. At the present time this description would be even more effective as a selling point, partly as a result of the quickened interest in British goods, and partly because many firms are now making goods so much like goods which formerly came from Germany that the buyer is not sure that he is not being deceived when he is informed that the goods he is now offered are British.

"A case brought to the notice of the British Trade Commissioner recently was one in which a buyer in New Zealand returned a shipment of goods because he was convinced that they were of German manufacture. In view of the developments which have been made in the United Kingdom in the manufacture of goods formerly supplied by Germany, this case illustrates what might easily happen in instances where goods really are British but are similar to German goods."—*Weekly Bulletin*, Dec. 25, 1916.

ARGENTINA.

Regulations of the Government Regarding the Importation of Knock-down Automobiles.

Where automobiles are imported knock-down, the parts being packed in separate cases, the latter are dutiable at 12% ad valorem, the rate applicable to motor vehicles, and are not

subject to the various specific rates applicable to different parts of automobiles. The contents of each packing case must be stated in detail and the weight given, in order that only such articles as form an integral part of an automobile imported knock-down may be admitted at the ad valorem rate. Parts not imported as above described would be subject to the appropriate specific duty.

AUSTRALIA.

A Standard for Condensed Milk has been in Effect since December 1st.

The following is the new standard for condensed milk imported into Australia, which has been in effect since December 1, 1916:—

Condensed milk shall be milk which is condensed or concentrated by any process whatever, with or without the addition of cane sugar; when containing such sugar it shall also contain not less than 8.5 per cent. of butter fat and 22 per cent. of milk solids not fat; or, when not containing such sugar, shall contain not less than 8 per cent. of butter fat and 20 per cent. of milk solids not fat.

Products Not According to Standard.

According to the Australian regulations the importation of an article not complying with prescribed standards is prohibited, unless the "trade description" on the labels or con-

tainers states in bold and legible character the extent to which the products do not conform to the requirements.

(The Australian regulations regarding trade descriptions and standards for certain goods are contained in Miscellaneous Series No. 45—Exporting to Australia—copies of which are for sale by the Superintendent of Documents, Washington, D.C., or at any district office of the Bureau of Foreign and Domestic Commerce for 5 cents.)

STEEL FROM SCRAP IRON.

Industry Proposed for Victoria, B.C., to Handle all the Scrap Iron on Pacific Coast.

A recent report from Victoria, B.C., states that David Milne, former mayor of Medicine Hat, is engaged in floating a \$250,000 company for the establishment of a steel industry in the vicinity of that city. The proposal is to secure a site, where water and power can be readily obtained, and where land is cheap and taxes low, and put up a mill with an initial capacity of 25 tons a day. All available scrap iron along the coast will be collected and converted into steel at the plant. After a start has been made with scrap iron, the company will commence the development of some of the iron ore bodies on Vancouver Island. A Seattle contractor, according to Mr. Milne, has already asked him to contract to supply 5,000 tons of steel within the next six months.

FOREIGN TRADE OF CANADA.

(Comparison 1914, 1915, 1916.)

IMPORTATIONS.

	Month of November.			Eight Months Ending November.		
	1914.	1915.	1916.	1914.	1915.	1916.
Dutiable goods	\$18,697,737	\$26,079,686	\$38,083,134	\$198,343,559	\$173,144,587	\$292,613,952
Free goods	12,854,453	19,137,873	34,607,657	120,010,448	125,088,015	242,238,334
\$45,217,559	Total	\$31,552,190	\$72,690,791	\$318,354,007	\$298,232,602	\$534,852,286
Coin and bullion	48,328,727	4,705,933	1,411,478	129,557,137	10,472,715	22,382,911
Grand total	\$79,880,917	\$49,923,492	\$74,102,269	\$447,911,144	\$308,705,317	\$557,235,197
Duty collected	5,113,062	9,440,315	12,116,329	53,628,018	62,063,179	94,293,647

EXPORTATIONS.

(For November.)

	—1914—		—1915—		—1916—	
	Domestic.	Foreign.	Domestic.	Foreign.	Domestic.	Foreign.
Products of the Mine	\$3,655,475	\$28,858	\$6,634,887	\$22,697	\$7,026,024	\$19,088
Products of the Fisheries	2,056,055	14,794	2,075,877	32,911	2,600,021	34,859
Products of the Forest	3,439,970	122,487	4,556,502	28,045	5,172,272	92,966
Animals and their Produce	8,470,602	814,967	12,113,520	88,334	13,603,193	894,344
Agriculture	18,846,286	1,708,367	53,936,837	64,430	36,789,632	453,276
Manufactures	6,376,500	599,798	13,231,022	1,122,758	44,119,094	623,346
Miscellaneous	27,221	80,887	383,271	145,002	248,714	125,544
	\$42,872,109	\$3,370,152	\$92,931,916	\$1,504,177	\$109,558,950	\$2,243,423
Coin and bullion	164	331,957	20	9,865,876	55,600	106,109
Total	\$42,872,273	\$3,702,109	\$92,931,936	\$11,370,053	\$109,614,550	\$2,349,532

EXPORTATIONS.

(Eight Months Ending November.)

	—1914—		—1915—		—1916—	
	Domestic.	Foreign.	Domestic.	Foreign.	Domestic.	Foreign.
Products of the Mine	\$35,169,285	\$186,034	\$43,401,193	\$7,057,407	\$55,268,521	\$160,269
Products of the Fisheries	11,980,770	92,777	14,036,566	77,516	15,445,407	64,963
Products of the Forest	32,357,299	476,590	38,631,846	381,325	41,876,025	295,578
Animals and their Produce	50,135,045	1,966,388	69,128,895	1,863,580	80,704,671	3,147,633
Agriculture	94,319,512	34,283,470	153,117,173	17,074,751	270,237,892	4,325,134
Manufactures	45,425,224	5,090,279	97,588,572	5,079,051	263,580,148	5,499,299
Miscellaneous	242,295	2,890,875	3,458,401	1,018,964	4,479,975	1,035,255
	\$269,629,430	\$44,986,413	\$419,362,646	\$32,552,594	\$731,592,639	\$14,528,131
Coin and bullion	430	4,099,439	95	103,049,697	71,392	195,828,583
Total	\$269,629,860	\$49,085,852	\$419,362,741	\$135,602,291	\$731,664,031	\$210,356,714



INSURANCE



CANADA'S FIRE WASTE IN 1916.

December Proved to be the Most Disastrous Month in the Year.

According to estimates compiled by the *Monetary Times*, the fire losses in Canada during the month of December amounted to \$3,271,496, as compared with \$923,235 during November and \$1,595,255 during December, 1915. This brings the total fire waste during the year to \$20,487,509, or more than \$7,000,000 in excess of 1915. The Quaker Oats fire at Peterborough and the destruction of the street railway barns in Toronto contributed principally towards December being the most disastrous month of the year.

FOREST FIRE LOSSES IN NORTHERN ONTARIO.

About Fifty per cent. of the Actual Loss Covered by Insurance.

Reports to the Provincial Fire Marshal's Office from Northern Ontario are now closed, and the following figures are given out as the official record of the loss to created property by the recent forest fires.

In all 849 people have suffered loss. The aggregate loss reaches a total of \$2,134,349. The insurance recovered or reclaimed upon licensed and unlicensed companies is \$1,045,585, and the loss sustained by the people in excess of insurance is \$1,088,764. In other words, about fifty per cent. of the actual loss on property is covered by insurance.

Of the claims upon insurance companies, \$654,922 is borne by the regular licensed companies, and the difference, amounting to \$390,633, is borne by unlicensed companies.

At Cochrane the loss was spread over 203 people, whose total loss is about \$960,000, with \$525,000 of insurance.

At Matheson the loss was sustained by fifty-one people for an amount of \$126,000; the total insurance here was only \$12,800.

PREVENTABLE FIRES.

Unusual Care Exercised When Insurance Cannot be Had.

Corroborative testimony as to the accuracy of the statement so frequently made, that a majority of the fires occurring annually in North America are preventable is furnished by the experience of the South Carolina fire insurance companies. The withdrawal of most of the outside fire companies from South Carolina early this year so affected the supply of insurance that property-owners, being forced to carry all or a large part of their own risks, were given a strong incentive to exercise unusual care in relation to fire hazards. The result is shown in the figures representing the business transacted by the State companies in the first eight months of the year when compared with the corresponding period last year. While their premium income increased from \$78,997 to \$331,860, their loss only advanced from \$55,199 to \$80,655, the loss ratios having been 69.87 per cent. in 1915 and 24.30 per cent. in 1916. This seems to prove that the people can reduce the fire loss very materially if they only determine to do so.

A TEXAS RECORD.

High Percentages of Past Six Years Were Preventable.

Records of 68,000 fires which have occurred in Texas in the last six years have been compiled by the State Fire Insurance Commission. Of a total of 32,274 fires in dwellings, apartment houses, etc., over sixty-six per cent. are classified as having been due to preventable causes, while fifty-two per

cent. of fires in mercantile risks, special hazards, etc., are similarly classified. These percentages are without regard to fires of unknown origin, which constituted probably one-fourth of the whole number. It is evident, therefore, that much remains to be done by the public in the way of exercising caution when dealing with possible causes of fire.

WHAT FOREST FIRES COST CANADA.

Over Nine Million Dollars' Worth of Timber Went Up in Smoke in 1916.

Canada has lost through forest fires in 1916 over nine million dollars, according to information supplied to "Canadian Finance" by Robson Black, secretary of the Canadian Forestry Association. This equals more than six times what has been spent on forest protection work from coast to coast. The enormous amount wasted through this year's forest fires, most of which were preventable, would add another \$480 to the first year's pension allowances of nearly 19,000 Canadian soldiers.

In areas where first-rate fire protection systems are in operation losses of life and property have been held down to a remarkable minimum. Within the 24,000 square miles of Quebec covered by the two well-organized associations of limit holders the amount of green timber burnt was practically negligible. The immunity was due to consistent effort to educate settlers, lumberjacks and others in care with fire, occupied with a system of promptly reporting all outbreaks and attacking forest fires in their incipency with large forces of men and modern equipment.

British Columbia faced fairly favorable fire conditions through the summer months, and the cost of fire fighting was reduced by about seventy-five per cent. from the record of 1915. The number of fires was about half of last year's. The British Columbia forest protection service is the most complete in Canada thus far, and the saving of timber is a logical consequence.

A heavy average of rainfall kept fire troubles at arm's length in Alberta, Saskatchewan and Manitoba, and this weather condition was undoubtedly responsible for the escape of the main areas of big timber throughout Ontario. The clay-belt fires at the end of July and first week of August provided a tragic sacrifice of 262 lives and what is estimated to be six million dollars' worth of property. There was practically no forest-guarding organization in the fire-swept district, except along the railway track.

New Brunswick escaped the risks of 1916 with a very small timber loss, Nova Scotia having a similar experience. The records of the Dominion Railway Board show that the privately-owned railway lines of Canada have not been responsible this year for any damaging forest fires. Those that were started were promptly extinguished by railway employees.

FIRE PREVENTION IN CANADA.

Conservation Commission May Take Action to Amend Insurance Acts.

At the annual meeting of Canada's Commission of Conservation, Mr. J. Grove Smith, who is preparing a comprehensive survey of Canada's fire losses and their prevention for the commission, stated that there are three great factors entering into the occurrence of all fires and the extent of loss resulting therefrom. These may be defined as physical hazard, moral

hazard and temperamental hazard. Physical hazard is a term applied to latent characteristics inherent in combustible property and its use, such as poor construction, occupational hazards, heating, lighting, power and other causes easily discerned. Moral hazard comprises intentional fires, and these may arise from motives of revenge, from insanity, or from the desire to secure unlawful gain by the destruction of insured property. Temperamental hazard is really a psychological study; it is the habit of the people, the state of mind which condones carelessness, is indifferent to its effects, and frequently denies its very existence. To this cause the immense number of fires in Canada can undoubtedly be ascribed. Among Mr. Smith's recommendations are a number relating to fire insurance which are distinctly drastic and possibly not very practicable. He advocates that the Commission of Conservation use its influence to secure the uniform amendment of the Insurance Acts now in force in Canada, as follows:

1. Any policy or contract of insurance to be invalid when issued without the written signed application of the assured or his or their duly-appointed agent.
2. The liability under any policy to be limited to 80 per cent. of any loss occurring on the property covered not exceeding the sum insured; and in case of other insurance, each policy to bear only such percentage of the 80 per cent. of loss as its face value bears to the whole amount insured.
3. Further insurance without due notice to companies already insuring to make void all previous insurance.
4. A duplicate of each proof of loss to be sent to the fire marshal of the province in which the loss occurs, and all insurance payments to be made subject to the signed authorization of the fire marshal.
5. No adjustment of losses under insurance policies to be made except by adjusters licensed by the Fire Marshal Department of the province in which the loss occurs.

NEW FORD ASSEMBLY PLAN.

Montreal, Toronto and Winnipeg Become Assembly Centres for Surrounding Territory.

Under a new plan of distribution, Ford cars are now being assembled at Toronto, Montreal and Winnipeg in the large branch factories at these points, and thence distributed to the dealers. In consequence the assembling of cars for these territories at the Ford, Ontario, factory, has been discontinued.

Anticipating a record-breaking public demand this year, the Ford Motor Company of Canada, Limited, have put this plan in operation to fortify themselves against the spring rush season of 1917 and subsequent ones. They will thereby cut down the time in which cars are in transit from the factory at Ford, Ontario, to their final destination.

Manufactured parts are now being shipped to the Toronto, Montreal and Winnipeg branches in car-load lots, thirty-six car loads of parts being required for the assembly of four hundred Ford automobiles. A heavy outlay for buildings and equipment necessary to provide additional assembly facilities has been made, and it is calculated that the saving of time on deliveries will more than recompense for the expenditure.

The strategic value of the new arrangement will be apparent when it is pointed out that this permits direct shipment from three conveniently situated territorial centres, instead of one central point for all Canada, as before. It will eliminate delays caused by shortage of freight cars and congested traffic conditions generally. Much time will be gained on the long haul from Ford, Ont., to Calgary, Saskatoon, and Regina, which places are now to be served from Winnipeg.

New Incorporations

Information about various new and old enterprises, the incorporation of which has been announced in recent issues of the Canadian and Provincial Gazettes.

Some New York capitalists are interested in the formation of the Hudson Copper Co., Limited, of Thessalon, Ont., which is authorized to use \$2,000,000 capital.

Three Rivers, Quebec, promises to have a new shoe manufacturing company, who are authorized to use \$100,000. The name of the company is Eureka Shoe Co., Limited.

A large company, proposing to employ over one million dollars capital, has been chartered, to use the name of Dominion Milk Corporation, Limited, Head Office, Toronto.

A big foundry company has made its appearance in the lists in Calgary. This company, Foundry Products, Limited, will employ half a million capital and go extensively into the iron and steel business.

The gypsum resources in the neighborhood of Paris, Ont., are evidently going to be put to further exploitation. A company, called the Ontario Gypsum Co., Limited, with a capital of \$750,000, having been formed for this purpose.

Great activity seems to be manifested with the object of giving present shoe manufacturers more competition. The latest development is the incorporation of the Macfarlane Shoe, Limited, of Montreal, with a capital of \$400,000.

The Wax and Glassine Paper Co., Limited, Cookshire, Que., recently incorporated with \$225,000 capital, have as one of their objects the supplying of greater quantities of these papers than can now be obtained from Canadian producers.

A \$2,000,000 corporation has been formed in Hamilton, called the Hamilton Steel Wheel Co., Limited, which, besides making steel wheels for trucks and farm vehicles, will also go largely into the business of manufacturing railway rolling stock.

Despite the high prices of leather and other materials used in the shoe trade, we have to record the incorporation of Canadian Juvenile Shoe Co., Limited, Sorel, Que., who expect to assist in satisfying the demand for neat footwear for children.

A new company for the manufacture of heating apparatus has recently been organized, with headquarters in Montreal East. Mr. C. W. Webb is interested in this new company, called the Dominion Boiler and Foundry, Limited, and the authorized capital is \$200,000.

Several Montreal merchants are interested in a new company which will have for its main object the dyeing of textiles and fibres generally, and natural and artificial silks. The capital of the company is \$250,000, and they will operate under the name of Canadian Silk & Dye Works, Limited.

It is very interesting to note that English capitalists are being awakened to the opportunities for investment in Canada. The Painless Horse-Shoe Nail, Limited, head office in Toronto, with a capital of \$600,000, has on its board of directors a number of English merchants and professional men.

The Michipicoten Power and Paper Co., Limited, has been formed, with temporary head office in Toronto, to develop power and manufacture paper in the Michipicoten district. This company is authorized to use the largest amount of capital utilized in any industry of its kind for some time past, namely, \$6,500,000.

It is said that a prominent condensed milk factory has changed hands recently and will now be operated by Canadian Milk Products Co., Limited, from their Canadian head office in Hamilton. The capital of the new company is \$200,000, mainly supplied, we understand, by financiers and gentlemen who are in the condensed milk business in Seattle, Washington.

Trade Enquiries

These enquiries come into our hands from various sources. The Weekly Bulletin of the Department of Trade and Commerce, from which the enquiries indicated in the sub-heading allotted to them are taken, should be read regularly by those interested in foreign trade. It will be sent free on application to the Department at Ottawa. The names connected with all those enquiries can be furnished direct from the Commercial Intelligence Department, Canadian Manufacturers Association, Toronto.

DOMESTIC TRADE ENQUIRIES.

666. **Commercial Advertising Films.**—A member of the Association, who provides entertainment in the form of moving pictures for the employees of the plant, would like to get in touch with manufacturers and others who send out films for advertising purposes.
667. **Yarn Spinning.**—A party in Quebec has on hand a quantity of natural wool, carded, which he desires to have spun for use on knitting machines. If anyone is prepared to undertake job work of this kind, we shall be glad to supply the name on application.
668. **Friction Clutches.**—We are advised by a firm of patent solicitors that some English clients of theirs, making the above line, desire to get in touch with a first-class manufacturing establishment in Canada prepared to take up the manufacture of their friction clutches. The English manufacturers are prepared to supply working drawings, finished wooden patterns, of various sizes, ready for the sand, together with complete data, prices, test results, etc.
669. **Sulphuric Acid.**—A firm of patent solicitors are in touch with a client who is the patentee of a process for the production of sulphuric acid described in a ready available bulletin, and they state that their client desires to make arrangements with a Canadian firm for Canadian manufacture.
670. **Brushes Mounted on Twisted Wire.**—A Canadian manufacturer of milking machines is desirous of getting in touch with a manufacturer able to produce for them quite a quantity of brushes mounted on wire to be used for cleaning rubber tubes of milking machines. The size of the hole to be cleaned is $\frac{3}{8}$ inch in diameter. Some short brushes about 12 inches long to clean tube $\frac{1}{4}$ inch in diameter are also required.
671. **Agencies.**—A gentleman in Quebec, formerly engaged in manufacturing on his own account, would like to get in touch with manufacturers who desire high-class representation in Quebec City and neighborhood. The very highest references can be furnished and his capabilities are absolutely beyond question.

EXPORT TRADE ENQUIRIES.

672. **Hardened Steel Dies for Brass Drawbench Work.**—A well-known British engineer requires for clients in Australia, the above-named articles. They are to run in sizes from $\frac{1}{4}$ inch up to 1 13-16 inch. Any manufacturer able to make quick deliveries will be supplied with additional information on application.
673. **Steel Split Pulleys.**—A well-known house in Sydney would like to get in touch with Canadian manufacturers of steel split pulleys. They are also interested in other lines of engineering supplies.
674. **Galvanized Wire.**—A New Zealand house would like to get in touch with Canadian manufacturers ready to export galvanized fencing wire to that country.
675. **Agencies.**—A well-known Australian house of commission agents, representing a number of good English manufacturers, mainly in hardware and engineering lines, is interested in hearing from Canadian manufacturers with a view to representation.
676. **Cheese and Butter.**—A French house in Tunis desires to get in touch with Canadian manufacturers of cheese and tinned butter.
677. **Salmon.**—A French house in Tunis desires to get in touch with Canadian manufacturers interested in exporting salmon.
678. **Nails and Screws.**—A French house in Tunis desires to get in touch with Canadian manufacturers of nails and screws.
679. **Chocolate.**—A French house in Tunis desires to get in touch with Canadian manufacturers of chocolate.
680. **Boots and Shoes.**—A manufacturers' agent in Glasgow, specializing in boots and shoes and offering English references, is decidedly of the opinion that Canadian high-class and medium grade men's and women's boots and shoes can be sold profitably in Scotland. We shall be glad to go further into this matter with any manufacturer who is inclined to consider the proposal of a representation on a commission basis.
681. **Agencies.**—An agent in New Zealand would like to hear from Canadian manufacturers of various lines with a view to getting sole representation in New Zealand. He offers Canadian bank references, and states that he does business with only the very best houses in New Zealand. The lines he is interested in are Twines, White Lead, Wire (various kinds), Nails, Tinned Salmon and Fruits, Rubber Hospital Supplies and Fertilizers.
682. **Special Representative in South America.**—A retired Government officer, who speaks both French and Spanish, and has already been in South America, intends to take a trip covering the whole of South America, and would like to hear from any Canadian manufacturers who may have interests that they wish looked after or special business of a temporary character done.
683. **Australian Agency.**—An agent, claiming to have a live selling organization in Australia, and who pays cash for goods in New York, is interested in negotiating with manufacturers of hardware, household articles and specialties.
684. **Agencies.**—A party in India, offering bank references, would like to hear from Canadian manufacturers who desire to extend their operations to India.
685. **Agencies.**—We have an enquiry from a well-recommended agent in Norway who is desirous of forming connections with Canadian manufacturers of any products that it may be found profitable to export to Norway. His business was established in 1880, and he has represented several very well-known American houses for many years.
686. **Chlorate of Potash.**—A New York export house would like to hear from any one capable of supplying them with this commodity.
687. **Tissue Paper Fruit Wraps.**—A New Zealand house is in the market for fruit wraps cut 8 x 8 and 10 x 10, and also in reels. Would like to have prices per ton, f.o.b. from Canadian manufacturers.
688. **Whiting.**—A Detroit house would like to hear from Canadian producers of whiting suitable for putty purposes.
689. **Steel Butt and Strap Hinges.**—A good house in Christchurch, New Zealand, would like to hear from Canadian manufacturers of lines that would compete with the best United States' lines.

690. **Semi Diesel Engines.**—A Belgian gentleman, with headquarters in London, and agents in France and Russia, would like to get from Canada quantities of Two-Stroke Semi Diesel Engines, without magneto, and consuming paraffin or oil.

IMPORT TRADE ENQUIRIES.

691. **New Zealand Wools.**—A commission house in New Zealand would like to hear from Canadian manufacturers who could utilize New Zealand wools.

692. **Jute and Manganese Ore.**—An agent in Bombay is interested in exporting the above-named commodities from India and would like to hear from Canadian importers.

EXPORT TRADE ENQUIRIES TAKEN FROM THE WEEKLY BULLETIN OF THE DEPARTMENT OF TRADE AND COMMERCE.

1914.-693. **Hardware.**—A Port Elizabeth firm of wholesale merchants make demand for supply from Canada of hardware, household and building. Special lines of cheap goods suitable for native trade. They request samples when possible, also catalogues and price lists of lanterns, cutlery, household tools, farm tools, shovels, enamelware, household utensils, stoves and other lines.

1915.-694. **Woodenware.**—A Port Elizabeth firm of wholesale merchants asks for samples when possible, catalogues and price lists of woodenware of all kinds, including stepladders and handles.

1917.-695. **Piping.**—A Port Elizabeth firm of wholesale merchants asks for full particulars regarding ability to export from Canadian piping manufacturers.

1937.-696. **Brushware.**—A Port Elizabeth wholesale firm requests correspondence from Canadian manufacturers of brushware of all kinds.

1946.-697. **Keg Staves.**—A Cape Town firm makes inquiry for the immediate supply of 1,000 kegs, suitable for casing packing, to be shipped in shooks. Two sizes required, 500 of 28 pounds keg and 500 of 56 pounds keg. Inquiring firm is willing to pay for cable quotation if from firm acquainted with class of goods required.

1964.-698. **Household Utensils.**—A Pretoria firm requests correspondence from Canadian manufacturers of household utensils of all kinds.

1968.-699. **Carbide.**—A Johannesburg firm of engineers and importers of railway and mining supplies is prepared to take up the representation of Canadian carbide. Immediate correspondence requested.

1985.-700. **Wood Paste Coverings.**—A Buenos Aires commission agent of Belgian nationality would like to get in touch with a Canadian manufacturer of wall coloured wood paste coverings.

1988.-701. **Wallpaper.**—A Buenos Aires commission agent of Belgian nationality would like to get in touch with a Canadian manufacturer of wallpaper hangings.

1993.-702. ***Nails.**—A firm in Bristol who require about 8 tons of wire cement coated nails per annum, wishes to hear from a manufacturer in Canada who can supply them with 1½ inch, 1¾ inch and 2 inch 14-gauge nails. About three-quarters of their requirements are for the 1½ inch and the remainder 1¾ inch nails, only two or three cwt. of the 2 inch size being required.

1997.-703. **Car Wheels.**—A railway supply company in China wants Canadian car wheels.

1998.-704. **Agency.**—An English firm with agents in most of the British colonies asks for the following Canadian

made goods to supply their agents in India and South Africa:—Boots and shoes, suitable for the native trade. Boots and shoes suitable for trade with whites. Cotton shirts, underclothing, cheap trousers, denim overalls, and jackets, suitable for native trade, Dungaree overalls. Soaps, perfumes, candies, chocolates, files, tools, etc., suitable for native trade.

They state they would prefer to work on a commission basis, but have made arrangements by which all orders can be confirmed and goods paid for through New York houses.

2014.-705. **Macaroni and Vermicelli.**—A Bristol brokerage firm desires to obtain macaroni and vermicelli from Canada.

2031.-706. **Nails, Bolts, Nuts, etc.**—A Bristol concern desires to make connections with a Canadian firm willing to carry on steady trade in the future in nails, bolts, nuts, screws, etc.

2042.-707. **Bronze Powder, Talc and Mica.**—A Manchester firm wishes to enter into correspondence with Canadian exporters of bronze powder, talc and mica.

2045.-708. ***Window Poles** with ends, rings and brackets, washboards, corn brooms, split and spring clothes pegs, enamelled hollow-ware, etc.—A Belfast firm will be glad to receive quotations from Canadian exporters of the above.

2048.-709. **Gramophones.**—A Belfast firm would like to receive quotations for the above.

2049.-710. **Electrically-driven Washing Machine.**—A Belfast house asks to be put in touch with Canadian makers.

2077.-711. **New York Export House.**—A large mercantile house having its head offices in London with a branch in New York and connections in Africa, Australia, the Argentine Republic, Brazil, Central America, and the West Indies, wishes to get into touch with Canadian firms wishing to find overseas markets for their products.

1.-712. **Brushes.**—A firm in Western Siberia, doing both a wholesale and retail business, desires quotations from Canadian manufacturers of brushes, particularly shaving brushes, c.i.f. Vladivostock, with a view to the execution of trial orders.

12.-713. **"Homing" Motor Tires.**—The inventors of the "Homing" motor-car tires are desirous of hearing from Canadian firms interested in marketing cheap and effective tires, with a view to the disposal of the Canadian patent for manufacturing in the Dominion.

15.-714. **Footwear.**—Canadian manufacturers of boots, shoes and rubbers are asked to furnish samples and quote prices to a large importing house in St. John's.

*Included in the list of articles the importation of which into the United Kingdom is prohibited except under license from the Board of Trade, London. For further information apply to the Department of Trade and Commerce, Ottawa, or to the Tariff Department, Canadian Manufacturers Association, Toronto.

RE-INKING OF TYPEWRITER RIBBONS.

The re-inking of typewriter ribbons by office help is now made possible by means of a simple re-inker recently introduced on the market. It is a handy, compact device no larger than a fountain pen, which will re-ink the typewriter ribbon in a few moments' time without the necessity of removing it from the machine. The re-inker consists of a barrel which contains the ink, and a re-inking head or cap which also serves to retain the ink in the barrel. The cap is fitted with a felt wick which feeds the ink to the re-inking roller as required. With the aid of this device the life of the average typewriter ribbon is increased several times its normal duration.—*Scientific American*.



THE CANADIAN BANK OF COMMERCE

Statement of the result of the business of the Bank for the year ending 30th November, 1916

Balance at credit of Profit and Loss Account brought forward from last year	\$461,892 25
Net Profits for the year ending 30th November, after providing for all bad and doubtful debts	2,439,415 17
	<u>\$2,901,307 42</u>

This has been appropriated as follows:

Dividends Nos. 116, 117, 118 and 119 at ten per cent. per annum	\$1,500,000 00
Bonus of one per cent. payable 1st June	150,000 00
Bonus of one per cent. payable 1st December	150,000 00
War tax on bank-note circulation to 30th November	147,288 33
Transferred to Pension Fund (annual contribution)	80,000 00
Subscriptions:	
Canadian Patriotic Fund	\$50,000 00
British Red Cross Fund	5,000 00
British Sailors' Relief Fund	5,000 00
Sundry subscriptions, including Northern Ontario Fire Relief Fund and War Hospitals, etc. ..	11,700 00
	<u>71,700 00</u>
Balance carried forward	802,319 09
	<u>\$2,901,307 42</u>

GENERAL STATEMENT—30th November, 1916

TO THE PUBLIC:	LIABILITIES.	
Notes of the Bank in circulation		\$19,259,347 68
Deposits not bearing interest	\$62,484,072 27	
Deposits bearing interest, including interest accrued to date	167,412,079 88	
		<u>229,896,152 15</u>
Balances due to other Banks in Canada		141,317 42
Balances due to Banks and Banking Correspondents elsewhere than in Canada		5,021,882 49
Bills Payable		2,186,836 68
Acceptances under Letters of Credit		2,092,640 13
		<u>\$258,598,176 55</u>

TO THE SHAREHOLDERS:

Dividends Unpaid		2,084 12
Dividends No. 119 and bonus, payable 1st December		525,000 00
Capital Paid up	\$15,000,000 00	
Rest Account	13,500,000 00	
Balance of Profits as per Profit and Loss Account	802,319 09	
		<u>29,302,319 09</u>
		<u>\$288,427,579 76</u>

ASSETS

Gold and Silver Coin Current	\$20,975,529 83	
Dominion Notes	19,315,476 00	
Deposit with the Central Gold Reserves	6,000,000 00	
		<u>\$46,291,005 83</u>
Notes of other Banks	\$1,630,360 00	
Cheques on other Banks	9,668,098 71	
Balances due by other Banks in Canada	1,389 86	
Balances due by Banks and Banking Correspondents elsewhere than in Canada	7,201,798 13	
		<u>18,501,646 70</u>
Dominion and Provincial Government Securities, not exceeding market value		2,781,960 86
British, Foreign and Colonial Public Securities and Canadian Municipal Securities		17,282,911 96
Railway and other Bonds, Debentures and Stocks, not exceeding market value		7,810,461 73
Call and Short Loans (not exceeding 30 days) in Canada on Bonds, Debentures and Stocks		14,725,133 07
Call and Short Loans (not exceeding 30 days) elsewhere than in Canada		21,141,335 85
Deposit with the Minister of Finance for the purposes of the Circulation Fund		806,964 42
		<u>\$129,341,420 42</u>
Other Current Loans and Discounts in Canada (less rebate of interest)		133,738,131 21
Other Current Loans and Discounts elsewhere than in Canada (less rebate of interest)		16,504,418 23
Liabilities of Customers under Letters of Credit, as per contra.		2,092,640 13
Overdue Debts (estimated loss provided for)		230,738 30
Real Estate other than Bank Premises (including the unsold balance of former premises of the Eastern Townships Bank)	\$1,264,458 34	
Less mortgage assumed	100,000 00	
		<u>1,164,458 34</u>
Mortgages on Real Estate sold by the Bank		389,411 53
Bank Premises at cost, less amounts written off	\$5,139,457 26	
Less mortgage assumed on property purchased	300,000 00	
		<u>4,839,457 26</u>
Other Assets not included in the foregoing		126,904 34
		<u>\$288,427,579 76</u>

B. E. WALKER, President.

JOHN AIRD, General Manager.

Report of the Auditors to the Shareholders of The Canadian Bank of Commerce.

In accordance with the provisions of sub-sections 19 and 20 of Section 56 of the Bank Act, 1913, we report as follows:

We have audited the above Balance Sheet and compared it with the books and vouchers at Head Office and with the certified returns from the branches. We have obtained all the information and explanations that we have required, and are of the opinion that the transactions of the Bank which have come under our notice have been within the powers of the Bank.

We have checked the cash and verified the securities representing the investments of the Bank at its chief office and principal branches at a date other than, and in addition to, the verification at 30th November, 1916, and found that they were in agreement with the entries in the books of the Bank relating thereto.

In our opinion the Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the affairs of the Bank according to the best of our information and the explanations given to us, and as shown by the books of the Bank.

T. HARRY WEBB, C.A., of Webb, Read, Hegan, Callingham & Co., } Auditors.
JAMES MARWICK, C.A., of Marwick, Mitchell, Peat & Co., }

CANADA'S FINANCIAL PROGRESS

Address of the President and General Manager of THE CANADIAN BANK OF COMMERCE AT THE ANNUAL MEETING OF THE BANK

Sir Edmund Walker is an international authority on Banking, and his review of Canadian affairs at the Annual Meeting of the Canadian Bank of Commerce, of which he is President, has come to attract widespread interest from the accuracy of its information and the comprehensive way in which it deals with the affairs of the nation. His address contained the following passages of general interest.

PRESIDENT'S ADDRESS.

I shall not apologize as I did a year ago for asking you to devote your attention to the material affairs of Canada at a time when the Empire and its Allies are fighting for the greatest of all causes—the liberty of the world. Canada has in that short time so enlarged her sphere of action that only the blind could fail to see that every detail of our national life which aids or hinders our power to serve in the great conflict is of supreme importance. In the terrible winter of 1914-15 we did not realize that our aid was to count for much in the struggle, greatly as we desired to help. We did not really believe, despite the warning of Kitchener, that the war would still be raging in 1917 with the end not nearly in sight. Now we do not talk of any definite time for the end; we only know that the last man, the last gun, the last dollar may be needed, but that we shall win beyond any peradventure if the people in all the allied countries can be made to understand what is required of them.

EXPORTS EXCEED IMPORTS.

Turning at once to our trade with other countries, that being the best indication of the tendency of affairs at the moment, we find that, leaving out the shipments of gold and bullion, both inwards and outwards, our exports for the fiscal year ending 31st March, 1916, exceeded our imports by \$249,088,274, and that for the six months ending 30th September, 1916, the excess was \$141,100,898. We cannot keep in mind too clearly what has happened since the end of our period of expansion in 1913, and a repetition of the figures given last year will aid us to do so.

Fiscal Year.	Imports.	Exports.	Excess Imports.	Excess Exports.
1912-13....	\$686,515,536	\$377,068,355	\$309,447,181	.....
1913-14....	635,383,222	455,437,224	179,945,998	.....
1914-15....	497,376,961	461,442,509	35,934,452	.....
1915-16....	530,211,796	779,300,070	.....	\$249,088,274
6 mos. end- ing Sept.	405,901,765	547,002,663	.....	141,100,898

The improvement from year to year is as follows:

1913 to 1914.....	\$129,501,183
1914 to 1915.....	144,011,546
1915 to 1916.....	285,022,726
1913 to 1916.....	\$558,535,455

For the six months of the present year the gain over the astonishing figures for the first half of last year is nearly another 100 millions.

The gain of 285 millions in our foreign trade as compared with March, 1915, is almost all due to the increase in the value of the exports, the increase in the imports being only 32 millions.

EFFECTIVE ECONOMY.

If we are really to exercise an effective economy we should be very jealous as to the nature of any imports not necessary for the production of war supplies or for our national existence. There is some improvement in this respect, but it is not pleasant to see about 10 millions sent abroad for motors and about as much more for silk goods and velvets. The chief increases are in iron and steel bars and goods, and in iron ores, in machinery, in wool, cotton and jute, and goods made therefrom; in raw rubber, in various chemicals, oils, explosives, etc., needed for making munitions, in various articles for the army and navy, and to a considerable extent in foodstuffs, so that apparently the chief increases are in necessary articles, although we regret that many of them were not made in Canada. There is a large increase in our exports under every general heading, especially under manufactures, mining, agriculture and animals and their products. The total of our imports and exports of merchandise in the fiscal year ending March, 1916, was \$1,309,511,866, against \$241,025,360 in 1896, that being also a period of excess exports. This enormous

foreign trade is of course coincident with a great decline in all domestic trade not connected with the war, and is swollen largely by purchases of steel and other material imported from the United States to be used here in making munitions; the money result is abnormal because of the high price of almost every known commodity. I am not putting forward the figures, however, as a guide to what may be possible after the war, I am putting them forward as an indication of what may be accomplished when we are spurred by great events. The financial ideal for us at the moment is to pay interest on our foreign indebtedness, to provide our share of the cost of the war, and to lend as much as possible to Great Britain to pay for munitions made for her by Canada. We are apparently accomplishing this, but in the absence of figures we cannot estimate what amount of profit from our home trade is eventually invested in war securities. We are, however, being helped to accomplish this result, in a manner which may deceive us, by the large market in the United States for our securities, and also by the many subscriptions received from our wealthy neighbours when issues of our own war loans are made in Canada.

UNITED STATES GOLD STOCK.

The affairs of the United States are necessarily always of great interest to us, but never more so than at the present time, and I hope that every shareholder will read attentively the carefully prepared report of our New York Agent. During the past year the United States has added to her gold stock, after deducting exports, about 400 millions in gold, and is now estimated to possess the huge sum of about \$2,750,000,000 in that metal. From information obtained in the United States we learn that the imports of gold from Canada for the ten months ending October were 385 millions of dollars. This was, of course, almost entirely on Imperial Government account. With the enormous volume of war business, the increase of credit made possible by the new Federal Reserve Bank Act and this influx of gold, trade has so increased that, in many lines of business, each month establishes a new record. An estimate of the foreign trade of the United States, given by our New York Agent, places the excess of exports over imports from August, 1914, to September, 1916, at \$4,158,000,000. This is said to be almost equivalent to the amount of United States securities held abroad before the war, and it is estimated that by the end of September securities of all kinds had been returned to the value of \$2,400,000,000, so roughly about \$1,600,000,000 remained abroad. Of this remainder the proportion which can be made available for British war finance is too uncertain to form a basis for an opinion of any value. Great Britain, however, holds a vast amount in the securities of countries other than the United States. I have seen the statement that about ninety per cent. of the present exports from the United States arises from war requirements. If this is even approximately correct we can imagine the vast additional increase in wealth if the war continues much longer, and the extent of the collapse in trade if it does not.

COST OF THE WAR.

At the end of October the war had cost us a little over 350 millions, and at our present rate of spending 300 millions more may be added during the coming year. From the excess of revenue over expenditure we may at the end of the fiscal year have 50 millions, or even more, to apply on war charges. To provide for so great a proportion of the total cost of the war in this manner reflects great credit on those who are responsible for Dominion finance. We have managed to finance the remainder of the cost thus far partly by an account with the Imperial Government for oversea and other disbursements, and partly by loans floated in Canada. Over 100 millions of the amount due the Imperial Government has been funded permanently and most of the balance is offset by payments on Great Britain's account. Some loans for ordinary capital expenditures which could not be deferred were made in New York in 1915. In March, 1916, a second loan was placed in New York amounting to 75 millions, of which 25 millions was used to take up a corresponding amount of the 45 millions borrowed in July, 1915. In September

a second loan in Canada was offered. This time the finance minister asked for 100 millions and the subscriptions exceeded 200 millions, the banks receiving nothing on their underwriting of a portion of the loan. These are such notable achievements that I am sure they cannot have escaped the memory of any Canadian, but I mention them for the benefit of the very large number of people outside Canada who read our annual reports.

WAR FINANCES.

In this review of the finances of the year it is necessary to recall that the proceeds of the first war loan of November, 1915, 100 millions, were used mainly, if not altogether, in the year 1916. There is one feature in Canadian war finance which differs in a marked degree from that of Great Britain. Our Finance Minister has as far as possible funded the debt as it has been incurred, with maturities neither so long as to involve present rates of interest for too many years, nor so short as to trouble the Government during a period of some years beyond any probable duration of the war. One of the disturbing features of the finance of Great Britain is the enormous quantity of Treasury Bills which must be renewed at very short intervals.

THRIFT FOR THE EMPIRE.

Thrift for the individual is excellent, but just now that is of minor importance. Thrift for the sake of Canada, thrift for the sake of the Empire, thrift to win the war should be our cry. We shall not fail for men, difficult as enlistment may be. We shall not fail because of inability to make or to procure war supplies. If we fail it will be because we have wasted on unnecessary things the money that would have won the war. The man or woman who works hard at making shells may take much comfort in helping to win the war, but the man or woman who, in addition, saves a part of the present high wages due to the war and buys a war security, or helps a bank to do so, has helped twice, and the second kind of help is the most vital. The manufacturers of the United States will make war supplies for money. We are doing better only if we supply them on credit.

In addition to the credits for munitions, the Canadian banks are at the moment giving credits to the British Government for the purchase of wheat to the extent of 20 millions, but the transactions are for a shorter duration than the obligations already mentioned.

PROSPERITY GENERAL.

The Review of Business Conditions which accompanies our annual report records prosperity beyond anything we have ever known in almost every part of Canada. This results from the existence of a market which needs almost everything we produce and which must pay almost anything the seller asks. If it is true that ninety per cent. of the exports of the United States are a result of the war, much the same must be true of Canada, and in addition a large part of our home consumption is due to the requirements of the Canadian army. As individuals, almost all are gaining by the war, except those with more or less fixed incomes and without power to adjust the same when prices are high, and those who are engaged in business not connected with war supplies. The money made by the individual, however, has, so far as the nation is concerned, to be provided by a war debt incurred partly by Canada and partly by Great Britain. We do not, like the United States, receive gold in exchange for a large part of our products, we even borrow from the United States part of the cost of the war.

THE DOLLAR SAVED.

If we could free ourselves from the habit of thinking of commodities merely in terms of their money value, we should discover that what we are doing is to provide material to help our gallant sons and their fellow Britons to win the war, and that there is no one to pay for this material ultimately but ourselves and the Motherland. Therefore, in the monthly letters issued by this Bank we have constantly preached thrift in order to discourage people from spending that which as a nation we cannot afford to spend. We repeat once more that every dollar any Canadian saves, whether he buys a war bond therewith or indirectly enables the bank to do so, is one dollar more of power to win the war, and that particular dollar no one else can provide if he fails to do so. We are told by every one who visits England, and especially by those who have also seen the battle line and the conditions there, that in Canada we act as if no war existed.

EXTRAVAGANCE.

I have referred to the motors and the silks, but they are only examples of an extravagance which is observable in every direction. We should undoubtedly forbid, or at all events heavily penalize, the importation of all luxuries; municipal expenditures should be further curtailed and all projected improvements first submitted to the criticism of provincial commissions; we should not think it amiss if the expenditures of individuals at eating places are legally restrained and meatless days are instituted. I am not endeavouring to say in what directions economy should be enforced in Canada as it has been in England, but beyond a doubt it must be enforced in many directions if it is not voluntarily adopted by our people.

INDUSTRIES AND RESEARCH.

We are not now discussing after-the-war conditions so much as we did a year ago—we have realized that our first duty is to win the war—but there are matters which prudence demands should not be neglected. I am glad to see that a very eminent man has been appointed as the head of a commission established by the Dominion Government for the purpose of scientific research in connection with our industries and our natural resources. We have on the one hand manufacturers craving for help in the questions arising in their business which depend on skilled knowledge in chemistry, physics, metallurgy and other branches of learning, and we have on the other laboratories and skilled

members of the faculties of our universities keen to solve these difficulties. We want some local machinery to bring these two together, and our provincial governments, aided by our boards of trade, could bring this about. If both manufacturers and governments are willing to join in the expense, which ought not to be burdensome, a bureau which would receive such problems and determine the cost of investigating them would place us in a position to begin this great work at once.

EFFICIENCY IN PRODUCTION.

We know that the future prosperity of the country with its load of war debt, depends upon greater production in the field, the pastures, the forests, the mines, the sea and in the workshops, and we cannot afford to be behind any nation in the world in efficiency when the fierce race for success in trade follows the war. In the West the provinces must spend liberally to improve agriculture and to encourage the increase of live stock, and whatever is possible must be done to enable the farmers to market their crops at the best time and to improve the conditions surrounding their homes. Nor can we afford to see the valuable fishing industry of British Columbia, which supplies forty per cent. of our fish, decline on account of the unskilled methods employed in both the salmon and halibut fisheries.

MAKING MUNITIONS.

A year ago we were able to make a few not very well-connected remarks regarding the manufacture of munitions in Canada. We sought, however, to convey at least some idea of the scale on which we were working, and to indicate that there are very few of our industries that cannot aid in the cause. Although very many goods are being shipped and contracts carried out which do not come within the operations of the Imperial Munitions Board, the War Purchasing Commission, the Department of Agriculture, or the British War Office Purchasing Department at Montreal, such information as can be gathered as to the operations of these bodies is useful. The shipments through the Imperial Munitions Board comprise empty, fixed and complete shells, also fusés, brass cartridge cases, steel forgings, cordite, tri-nitro-toluol, etc. During 1916 the total disbursements were about 320 millions of dollars, and while we have no information on which to hazard an opinion as to the scope of operations for 1917, it is at least suggestive that the actual business completed during the year amounted to about a million dollars a day, and that many manufacturers are only now ready to deliver certain kinds of shells to the full capacity of the plants established for the purpose.

WOMEN EMPLOYED.

A year ago women were but little employed in making munitions, now they are working by thousands in munition factories, and while much delay was caused by the necessity of creating new shop conditions for them, this has been accomplished in many factories, and we can but hope that thousands more of our women will come forward for this work and thus release many men for the front. When we consider that there are 600 factories in Canada and Newfoundland from the Atlantic to the Pacific, all making munitions night and day, three shifts of eight hours, or for the women in some cases, four shifts of six hours daily, we can get some sense of the scale of operations. The supervision of all this requires between 3,000 and 4,000 inspectors and 600 other employees.

OUR SOLDIERS' EQUIPMENT.

This is all on Imperial account, but we find that the work of the War Purchasing Commission appointed by the Dominion Government is on a similar scale. For the first year or more practically everything required for the upkeep of our army in England and France was supplied by Great Britain on our account. Since then we have tried to supply its requirements direct from Canada, although this is possible only in the case of some articles.

We have no knowledge as to the total amount expended by the Commission, but the following items will be interesting:—

Clothing, boots, etc.....	\$35,000,000
Motor trucks and other vehicles.....	3,000,000
Accoutrements	3,000,000
Arsenal supplies, cartridges, rifles, machine guns and revolvers	17,000,000
Drugs and surgical instruments.....	1,000,000
Furniture, hospital supplies and stores.....	6,000,000
Transportation of troops to seaboard and to England, over	10,000,000
Maintenance of men while in Canada, not including pay, about.....	35,000,000

The Commission has purchased about 3 million pounds of fresh fish, about half on Canadian and half on Imperial account.

WAR PURCHASES.

The purchases on Imperial account by the Department of Agriculture for the year to 23rd December, amount to 186,000 long tons of hay, 450,000 tons of oats, equalling nearly 30,000,000 bushels and 187,000 tons of flour, the amount expended in this way being over \$37,500,000.

Among the purchases of the British War Office Purchasing Department at Montreal for the past year, are the following items:

Cottons and woolsens	\$1,000,000
Food stuffs—cheese, canned meat and vegetables, etc.	20,000,000
Miscellaneous merchandise of iron and steel.....	1,500,000
Other miscellaneous merchandise.....	1,500,000
	\$24,000,000

There are, of course, thousands of articles not mentioned here which are made in Canada, the cost of which represents many millions; indeed it is a most gratifying fact that Canada has been able to produce nearly everything required by our army, the exceptions being binoculars, machine guns, revolvers, motor trucks, and some less important articles.

Since the war began we have learned much in the workshop, in the chemical and physical laboratory, in the refinery, in the counting house, in finance, indeed in every walk of life. We have been able to form some estimate of our value among the forces of the Allies, from the boy in the trenches to the father at home who is backing his son in so many ways, but do we realize that what we do, or do not do, may turn the scale on which depends victory or defeat? Our responsibility for the future of the Empire and of Canada is so great that there is no room for slackness. We must do, not many things, but everything that will help to win the war.

The great Canadian banks with their nation-wide system of branches, touch the life of the community so closely and at so many points that the remarks of Mr. John Aird, the General Manager, in reviewing the year's progress of the great institution under his charge, cannot fail to be of interest and of importance.

GENERAL MANAGER'S ADDRESS.

The shadow of the great European war has been the dominating influence in business affairs during the year through which we have just passed. No important new transaction could be undertaken without considering the effect of the war, and in the conduct of the affairs of a great fiduciary institution such as a bank it has been necessary to give more consideration to the factor of safety than to the factor of profit. Under these circumstances we feel that you will be well content with the results which we lay before you to-day.

The Bank's profits for the year under review were \$2,439,415, an increase of \$87,380 over the figures of the preceding year, a trifling sum when you consider the increased amount of business on which it has been earned, and the great activity which has prevailed throughout the year. We have felt it our duty to render a large amount of assistance in their financing to both the Imperial Government and the Dominion Government, and as rates of interest on this class of business are naturally low, our profits have been reduced correspondingly.

INCREASED TURNOVER.

Apart from this, however, there has been a greatly increased turnover during the past year which is not reflected in an increase of the profits of the Bank, and this tendency towards a steady reduction in profits has been apparent for some years past. The ratio of our profits to total average assets during the five years ending 1915 ranged from 1.45 per cent. to 1.13 per cent., but in almost every year the tendency has been downwards.

We have paid the usual dividends at the rate of ten per cent. per annum, with bonuses of one per cent. at the end of each half year; the war tax on our note circulation has called for \$147,288, the Officers' Pension Fund for \$80,000, and sundry subscriptions for patriotic purposes for \$71,700, leaving a balance at credit of profit and loss of \$802,319 to be carried forward to the accounts of next year. As long as present conditions continue we must, I fear, accept a low rate of profit, and it is, of course, possible that there may be still further depreciation in the market value of securities, so that we think it wise to carry forward a large balance in profit and loss account. During the past year the values of investment securities have depreciated further, which is only natural as long as the governments of the great nations engaged in the war are obliged to increase the rates of interest which their securities bear. Up to the present, however, we have not found it necessary to add to the sum of \$1,000,000 reserved last year for possible further depreciations, and we believe that we have provided for anything which is likely to occur.

GROWTH IN DEPOSITS.

Our deposits show a satisfactory growth, the increase being \$35,373,000, of which over \$25,000,000 is in deposits bearing interest; these include the savings of the people and are therefore less subject to fluctuation than demand deposits not bearing interest. Through the medium of our Monthly Commercial Letter we have endeavoured to impress upon the public mind the necessity for the exercise of economy to a degree never before known in Canada, and we should like to think that some part of the increase to which we have just referred has been due to the advice thus given. Canadians cannot too often be reminded that only by the universal exercise of economy and thrift to an extent to which they have in the past been strangers, and by the setting aside of what is thus saved for investment in government loans or as bank deposits, can we do our share to provide the wherewithal necessary to carry the war to a victorious conclusion.

STRONG CASH RESERVES.

Our total holdings of coin and legals are \$46,291,000, an increase of \$6,389,000 over the figures of a year ago, but of this sum \$6,000,000 is represented by a deposit in the Central Gold Reserves to cover the issue of note circulation in excess of our paid-up capital, already referred to. These holdings of cash represent 18.5 per cent. of the total of our deposits and circulation and 17.9 per cent. of our total liabilities to the public, and in view of the uncertainties of war conditions we are sure that you will approve our policy of keeping strong in this respect. Our immediate available assets total \$129,341,000, equal to fifty-six per cent. of our deposits and fifty per cent. of our total liabilities

to the public. The largest increase in any one item composing this amount is in British, foreign and colonial securities, etc., which show an increase of over \$15,500,000 and include the securities purchased and held for the advances which we have made to the Imperial Government to finance their purchases in the Dominion. There has been a slight increase of \$858,000 in our holdings of Dominion and Provincial securities and a decrease of \$1,802,000 in our holdings of railway and other bonds, debentures and stocks. We have thought it desirable, in view of the exigencies of the war and of the requirements of the governments of Great Britain and Canada, to realize on these securities as opportunity offered. This has seemed the more advisable because of the doubtful outlook as to the future trend in the value of such securities.

ASSIST HOME INDUSTRY.

Notwithstanding the advances we have made to the governments of our own country and Great Britain for the purposes of the war, we have not found it necessary to decrease the assistance which we render to the ordinary business of the country. Indeed, our total current loans at the date of the statement before you amounted to \$186,109,000, an increase of over \$13,800,000 as compared with the figures of a year ago. It has always been the policy of this Bank to consider as one of the principal aims which should be kept before the executive, that it should render the utmost possible assistance to the development of Canadian trade and industry. We have not failed in this duty during the year just past.

THE STAFF.

The members of the staff number 2,976, as shown in the following comparative table:—

	30th Nov., 1916	30th Nov., 1915	31st July, 1914
Officers on regular staff.....	1,806	2,170	2,597
Temporary clerks.....	187	61	3
Temporary women clerks and stenographers.....	352	23	2
Stenographers and women clerks on regular staff.....	373	344	378
Messengers.....	258	230	232
	2,976	2,828	3,212

in addition to which we have 368 janitors, making a total of 3,344 persons employed by the Bank.

The changes in personnel indicated by the above figures are eloquent of the burden which has been laid upon the shoulders of the older members of the staff to maintain our organization at a satisfactory level of efficiency and, at the same time, to assist in the training of the unusually large percentage of the staff which is without any previous experience. At the 30th of November, 1,207 of our officers had enlisted as against 748 a year ago, representing about sixty per cent. of the male staff, and it is interesting to note that 264 of our officers have attained to commissioned and 168 to non-commissioned rank in the army.

FURTHER ENLISTMENT.

Not only has it been necessary to cope with the immediate difficulties arising from a depleted staff, but provision has had to be made as well for the additional strengthening of our ranks in order to meet with some degree of preparedness to the problem of future enlistments. One expedient adopted to meet the exigencies of the case has been the employment of temporary men clerks, of whom we now have 187, and of women clerks, both permanent and temporary, the number of women on our staff having increased during the past year from 367 to 725.

With a staff thus augmented to an unusual degree by untrained and inexperienced workers, many problems have arisen and the task of distributing the burden as equitably as possible has been by no means easy. Furthermore, an inexperienced and untried staff must mean a staff enlarged beyond normal requirements and a consequent addition to the cost of operation. These, however, are conditions inevitable in times such as we are passing through, and we can testify to the ready and cheerful manner in which we have been supported by the staff generally in dealing with them.

THE SUPREME SACRIFICE.

Since our last annual meeting an additional fifty-nine brave and promising young men of our staff have laid down their lives on the field of battle. Our complete casualty list as to December 31st is as follows:—

Killed.....	84
Wounded.....	175
Missing.....	8
Prisoners.....	9
Ill.....	20
	296

We have received many indications that our men are measuring well up to what is required of them and are capable of taking their full share in the wonderful operations at the front which are thrilling the world. Six of our officers have been awarded the Military Cross and three more have been recommended for it.

STAFF AT HOME.

We do not think that it would be fair thus to express our pride in our banker soldiers without adding a further word in commendation of the staff at home. While we still have to expect that some of them will take up military duty, we are satisfied that those who have remained at home thus far have been actuated by the highest motives; indeed, the work of the Bank could not be efficiently carried on without retaining the services of many men who in other respects would be available for military service.

FORTY-SEVENTH ANNUAL STATEMENT OF The Royal Bank of Canada

GENERAL STATEMENT

30th November, 1916

LIABILITIES

TO THE PUBLIC:

Deposits not bearing interest	\$59,365,396 12	
Deposits bearing interest, including interest accrued to date of statement	140,862,199 46	
		\$200,227,595 58
Notes of the Bank in Circulation		18,178,228 49
Balances due to other Banks in Canada	\$1,464,467 85	
Balances due to Banks and Banking Correspondents in the United Kingdom and foreign countries	6,683,108 63	
		8,147,576 48
Bills Payable		478,392 16
Acceptances under Letters of Credit		452,677 26

TO THE SHAREHOLDERS:

Capital Stock Paid in		\$227,484,469 97
Reserve Fund	\$12,560,000 00	12,000,000 00
Balance of Profits carried forward	852,346 28	
		13,412,346 28
Dividend No. 117 (at 12 per cent. per annum), payable Dec. 1st, 1916	\$359,840 71	
Dividends Unclaimed	4,770 25	
		364,610 96

\$253,261,427 21

ASSETS

Current Coin	\$16,072,763 38	
Dominion Notes	14,249,110 25	
		\$30,321,873 63
Deposit in the Central Gold Reserves	\$6,500,000 00	
Deposit with the Minister for the purposes of the Circulation Fund	595,340 00	
Notes of other Banks	3,857,573 80	
Cheques on other Banks	11,805,508 55	
Balances due by other Banks in Canada	1,199 79	
Balances due by Banks and Banking Correspondents elsewhere than in Canada	5,092,067 54	
Dominion and Provincial Government Securities, not exceeding market value	1,029,374 10	
Canadian Municipal Securities and British, Foreign and Colonial Public Securities other than Canadian, not exceeding market value	14,012,089 69	
Railway and other Bonds, Debentures and Stocks, not exceeding market value	15,464,604 22	
Call Loans in Canada, on Bonds, Debentures and Stocks	11,076,005 90	
Call and Short (not exceeding thirty days) Loans elsewhere than in Canada	21,372,026 45	
		\$121,127,663 67
Other Current Loans and Discounts in Canada (less rebate of interest)	\$86,936,631 39	
Other Current Loans and Discounts elsewhere than in Canada (less rebate of interest)	37,928,027 25	
Overdue Debts (estimated loss provided for)	466,640 93	
		125,331,299 57
Real Estate other than Bank Premises		1,095,473 24
Bank Premises, at not more than cost, less amounts written off		5,138,398 14
Liabilities of Customers under Letters of Credit, as per contra		452,677 26
Other Assets not included in the foregoing		115,915 33

\$253,261,427 21

H. S. HOLT, President.

EDSON L. PEASE, Managing Director.

C. E. NEILL, General Manager.

AUDITORS' CERTIFICATE

WE REPORT TO THE SHAREHOLDERS OF THE ROYAL BANK OF CANADA:

That, in our opinion, the transactions of the Bank which have come under our notice have been within the powers of the Bank. That we have checked the cash and verified the securities of the Bank at the Chief Office at 30th November, 1916, as well as at another time, as required by Section 56 of the Bank Act, and that we found they agreed with the entries in the books in regard thereto. We also, during the year, checked the cash and verified the securities at the principal branches.

That the above Balance Sheet has been compared by us with the books at the Chief Office, and with the certified returns from the Branches, and in our opinion is properly drawn up so as to exhibit a true and correct view of the state of the Bank's affairs according to the best of our information and the explanations given to us and as shown by the books of the Bank.

That we have obtained all the information and explanations required by us.

JAMES MARWICK, C.A. }
S. ROGER MITCHELL, C.A. } Auditors.
of Marwick, Mitchell, Peat and Co.

Montreal, Canada, December 18th, 1916.

PROFIT AND LOSS ACCOUNT

Balance of Profit and Loss Account, 30th November, 1915	\$676,472 16	
Profits for the year, after deducting charges of management and all other expenses, accrued interest on deposits, full provision for all bad and doubtful debts and rebate of interest on unmatured bills	2,111,307 65	
		\$2,787,779 81

Appropriated as follows:—

Dividends Nos. 114, 115, 116 and 117, at 12 per cent. per annum	\$1,417,207 02	
Transferred to Officers' Pension Fund	100,000 00	
Written off Bank Premises Account	250,000 00	
War Tax on Bank Note Circulation	118,226 51	
Contribution to Patriotic Fund	50,000 00	
Balance of Profit and Loss carried forward	852,346 28	
		\$2,787,779 81

H. S. HOLT,
President.

EDSON L. PEASE,
Managing Director.

C. E. NEILL,
General Manager.

Montreal, 18th December, 1916.

Among the Industries

Under this heading are published items of news of current interest concerning the activities of Canadian manufacturers. Information about changes of interest, enlargement of plants, and plans for future developments are always welcome, and are published free of charge, provided they should not be properly classified as advertisements.

* Items prefixed with an asterisk are based on official information received in each case from the companies mentioned. Other items, while secured usually from reliable sources, have not the same authoritative origin.

BRITISH COLUMBIA.

Eburne.

The British Pacific Iron and Steel Company proposes to expend some quarter of a million dollars on a steel plant near Eburne, B.C., on the Fraser River, where they have secured a ten-acre site. Orders have already been placed in the east for several open-hearth furnaces. Pig iron will be secured from China.

New Westminster.

J. Leckie & Co., Limited, have leased the Fraser River Tannery at South New Westminster, and will operate it for the supply of their Vancouver shoe factory. The capacity of the plant is about one hundred sides of leather per day, and it is expected that with present alterations completed, the tannery will be in operation in March, giving employment to some twenty men. This is one of the few tanneries in Western Canada, and was not financially successful when previously operated, although the quality of the leather turned out is stated to have been excellent. The main difficulty at that time was the supply of raw materials. Under the pre-

sent changed conditions, however, it is probable the plant will be a commercial success, and will remain as a permanent industry, with a good chance of extension.

Prince Rupert.

The negotiations between the G.T.P. and the Emerson Lumber Company in connection with the proposed establishment of a sawmill at Seal Cove, are progressing, and not later than January preliminary work for the building of the mill will be under way.

Rivers Inlet.

The erection of a salmon cannery is contemplated by the Provincial Cannery, and work will start in the spring. R. G. Johnston, manager of the Inverness Canning Company, Inverness, B.C., is interested in the project.

JAMES, LOUDON & HERTZBERG, Limited

CONSULTING ENGINEERS

36 TORONTO STREET, TORONTO, CANADA

Reports, Arbitrations, Surveys, Disposal of Trade Wastes, Plans and Specifications for Industrial Plants, Structures in Steel and Concrete.

E. A. JAMES, M. Can. Soc. C.E. LIEUT. JOHN T. HOWARD, M. Am. Soc. C.E. B.A. Sc.

MAJOR T. R. LOUDON, B.A. Sc. E. M. PROCTOR, B.A. Sc.

LIEUT. C. S. L. HERTZBERG, A.M. Can. Soc. C.E.

Condensed Advertising

FACTORY FOR SALE.

For Sale.—Factory Building, centrally located in St. Catharines and recently vacated for larger premises. Occupation immediately.—Apply J. H. Wethey, Limited, St. Catharines.

PARTNER WANTED.

Well-established hosiery and knit goods mill seeks silent or working partners, men with knowledge of the business preferred. Good practical men with small capital not rejected. Apply to Box 93, INDUSTRIAL CANADA, Toronto.

FACTORY FOR SALE.

Factory building, specially built for wood-working; 20,000 sq. feet floor area; also 3¾ acres of land and railway siding; in Ontario town. For sale cheap. Address INDUSTRIAL CANADA, Box 2, Toronto.

AGENCIES WANTED

The undersigned is open to represent one or two responsible manufacturers in the City of Hamilton on a commission basis.

Has extensive acquaintance with the general manufacturing interests of the city, and can furnish excellent references.

Address, CHAS. A. MURTON,
34 King William St., Hamilton, Ont.

Former Secretary Hamilton Branch
Canadian Manufacturers' Association.

RIVETED STEEL TANKS FOR EVERY PURPOSE



**OIL STORAGE - GASOLINE TANKS - AIR RECEIVERS
PNEUMATIC WATER SUPPLY TANKS - SMOKE STACKS
BOILER BREECHING - RIVETED STEEL PIPE - BINS & HOPPERS**

BRYAN PONTIFEX CHARTERED ACCOUNTANT

Factory Accounting a Speciality



EXCELSIOR LIFE BUILDING
TORONTO STREET
TORONTO

Phone Main 1327

Economy and Accuracy IN SCREW THREAD GAGING

The upper contact points are set to the maximum size—the lower to the minimum. Lay the screw between the upper points and let it "find its own level." Can anything be simpler?



JUST RIGHT

Varying judgment of individual workmen is entirely eliminated by the use of

WELLS LIMIT GAGES

Send us an outline of your requirements. We will plan the gages for your output.

Wells Bros. Company of Canada, Limited

GALT - ONTARIO

Manufacturers of the celebrated *Little Giant* line of
TAPS, DIES and SCREW PLATES, GAGES AND REAMERS

North Vancouver.

The general contract for the construction of sawmill buildings and a large wharf for the Canadian Robert Dollar Company has been awarded at an approximate cost of \$200,000.

The new plant of the Vancouver Creosoting Company, Limited, at North Vancouver, commenced operations this month. The total cost of construction was approximately \$300,000.

Vancouver.

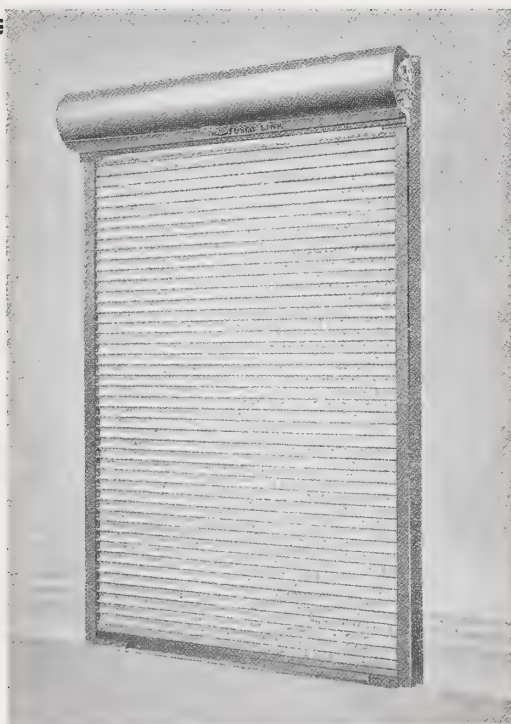
As a result of the harbor policy adopted at Vancouver, the Vulcan Iron Works will locate at False Creek, on the ground reclaimed by the Harbor Commission. Plans have already been prepared and erection is to start on the new building immediately. The investment to be made will amount to \$200,000, and one hundred men will be employed. The plant is to be most up-to-date and the handling facilities first-class, the intention being to install electric cranes. The firm have sufficient orders on hand to keep them busy for twelve months. They will make a specialty of Scotch marine boilers, which in the past have very largely been imported from Scotland.

Dominion Glazed Pipe Company, Front St., plan erecting a new plant for manufacturing cement sewer pipe. Estimated cost, \$50,000.

Victoria.

Application has been made to the government by a number of prominent Victoria business men for the incorporation of a company to establish a steel works in this vicinity. The company is to be backed with a capitalization of \$250,000. The chief man in the company is David Milne, former mayor of Medicine Hat.

Ormsby ^{Rolling Steel} Doors



Save Space—Lessen Fire Risks

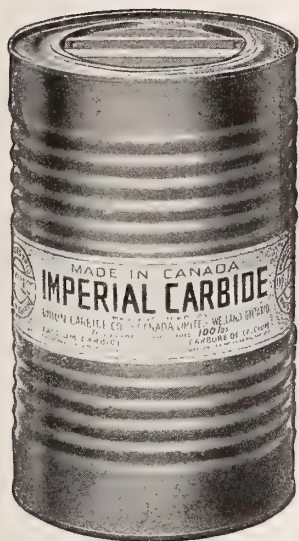
Fire Protection—100% efficient—soon pays its cost in insurance premiums saved. This door approved after severe tests by the Underwriters, takes less than 3 inches space on either side of the opening, and from 10 to 14 inches overhead. Openings in awkward corners can be made fireproof. Thus many old buildings, as well as new, can secure big reductions in fire rates for a small capital outlay. Send for blue prints and full information.

A. B. ORMSBY & CO., Limited
TORONTO

Associated with THE METAL SHINGLE & SIDING CO., Limited

PRESTON MONTREAL WINNIPEG SASKATOON VANCOUVER

BETTER WELDING



results are certain when a steady flow of pure acetylene gas is secured. Without this, it is practically impossible to secure the even, intense flame so necessary for effective welding.

Welders, realizing this, are now using

IMPERIAL CARBIDE

because it produces acetylene of unusual purity.

IMPERIAL CARBIDE is a superior grade of Calcium Carbide—made by the most modern methods from the best raw materials obtainable.

Imperial Carbide can be obtained direct from our Works or from any of our distributing points conveniently located throughout Canada.

Write for quotations and further information.

Union Carbide Company of Canada, Limited

Works : WELLAND

Head Office : DOMINION BANK BLDG., TORONTO



**Give him lots of Light—
It pays—**

Every minute counts. Don't let a valuable workman take seventy seconds where sixty should be enough—just because he has a poor light to see by. Get Hydro current, get Hydro engineering advice and service.



Toronto Hydro-Electric System

226 Yonge

Phone Adel. 2120



An Apology

Many firms have honored us with orders for International Time Recording systems, intending to start the new system with the New Year.

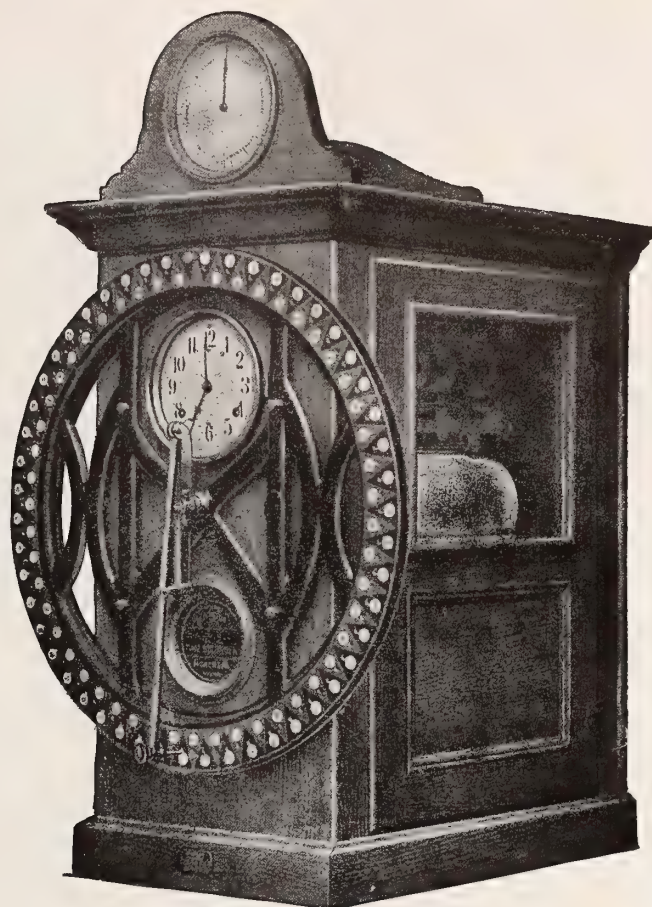
To such, where we have been unable to make deliveries, we tender our sincere apologies and say that within a few weeks, with our increasing factory facilities, we will be up with our orders.

We wish you all a very prosperous New Year.

**International Time Recording
Company of Canada, Limited**
Toronto



FRANK E. MUTTON,
Vice-President and
General Manager



We are busy—busy—busy! WHY?

BECAUSE an International Time Recorder does more and gives you more than any other machine in the world for the money.

BECAUSE the three great factors in any business are *Men, Minutes* and *Money*, and the International Time Recorder governs all three.

Therefore, we sell 95% of the world's Time Recorders, and we have them to suit every business.

International Time Recording Co. of Canada, Limited

Anderson St., Toronto

Winnipeg

Vancouver

Montreal:

Cartier Bldg.

F. E. Mutton, Gen. Man. 400 Electric Ry. Bldg.

817 Pender St. W.

Cor. McGill and Notre Dame Sts.



NEW BRUNSWICK.

Bathurst.

The Bathurst Lumber Company plan erection of a new paper mill. In this connection the company proposes to develop 10,000 horse-power at Grand Falls, on the Nepisiguit River, about eighteen miles from Bathurst, and the second largest water power in the province. Vice-president and Manager, Angus McLean.

Millerton.

The New Brunswick Pulp and Paper Company, Limited, have started work on their mill, and will do all the work themselves. The approximate cost is \$150,000.

St. John.

The Nashwaak Pulp & Paper Company propose to make improvements to the plant of the Edward Partington Pulp and Paper Company, which they have purchased, and work will start immediately. Estimated cost \$250,000.

St. Stephen.

Haley and Sons are rebuilding their lumber plant at an estimated cost of \$30,000.

NOVA SCOTIA.

Dartmouth.

It is reported that the Imperial Oil Company will, in the near future, start construction work on a new refinery to be erected here.

Kingston.

The Acadia Canning and Creamery Company, Limited, propose to enlarge their factory, and to start work next summer.

Sydney.

Various improvements are contemplated at the plant of the Dominion Steel Corporation at Sydney. The changes are intended to increase the annual output as well as to decrease the cost of steel production. Mr. Workman, the president, announces that the company does not owe a cent, and that the outlook for the future was never brighter.

Westville.

The brick plant at the Drummond Colliery is said to be more prosperous now than ever before in its history. The output of fire brick exceeds 100,000 per month, and a ready market at a good price is found at the steel plants at Sydney and Sydney Mines.

ONTARIO.

Bracebridge.

The Beacon Match Company proposes to erect a plant here to cost \$45,000.

The Genessee Pure Food Company, of Leroy, N.Y., has decided to erect a large plant here next spring.

The Augustine Automatic Rotary Engine Company, of Buffalo, has purchased a site and will erect a plant here.

Burford.

The Canadian Milk Products Company, Mail Building, Toronto, is having a factory built by day labor, at an estimated cost of \$20,000.

Campbellford.

The plant of the Dickson Bridge Works Company, was totally destroyed by fire on December 10th. The loss, estimated at about \$60,000, is mostly covered by insurance.

Cardinal.

The general contract for the erection of a factory addition for the Canadian Starch Company, 164 St. James St., Montreal, has been let. The estimated cost is \$20,000.

Cayuga.

John Ranston's grist mill was destroyed by fire on Dec. 7th, at a loss of \$10,000.

Chatham.

There is a probability that the Hayes Wheel Works will be converted into a munition factory. It is understood that considerable additions will be made to the present plant.

Contract has been awarded for the erection of a cooling station for the C.P.R., to be built near the bridge where the C.P.R. crosses the river.

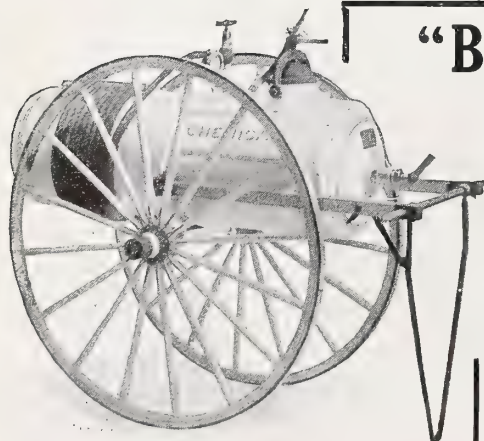
The Imperial Oil Company has purchased a site and proposes spending considerable money in the erection of an up-to-date plant.

AEROPLANE PRODUCTS, LIMITED

44-50 PEARL STREET, TORONTO, ONT.

Aeroplane Metal Fittings, and all classes of machining, stamping, welding, brazing.

Prompt Deliveries.



"Bickle Junior" Chemical Fire Engine

Protect your factory and warehouse from fire with a "BICKLE JUNIOR." It throws a chemical stream fifty feet long or thirty-five feet high and has a greater fire killing power than 1,600 gallons of water! Only thirty inches wide over all, goes through ordinary door openings and can be stored in any handy place. Pull a lever, open a valve and within ten seconds stream is going full force. One man can handle with ease. Get one or more according to size of your plant. It means sure protection and reduced insurance rates.

Try It Before You Buy It

We will ship you a completely equipped "BICKLE JUNIOR" Chemical Engine on trial, F.O.B. Woodstock, Ont. Build a fire of old lumber, saturate with kerosene and try the "BICKLE JUNIOR" on the blaze. If it doesn't handle the fire with ease ship it back without any obligation on your part. Write for descriptive booklet.

THE R. S. BICKLE COMPANY

EVERYTHING IN FIRE APPARATUS

WINNIPEG, MAN.

WOODSTOCK, ONT.

BE UP-TO-DATE!



USE STEEL BARRELS FOR YOUR PRODUCT
*instead of the old-fashioned,
leaky wooden ones.*

THE SMART-TURNER MACHINE CO., Limited
HAMILTON - CANADA

"Metallic" Building Materials

Smarten Up Your Office and Warehouse



Use "M-R Co." Ceiling and Wall Plates. Easily put on. Splendid range of patterns, cornices, mouldings, etc. Sanitary and fireproof.

Big stocks and prompt shipments.

The Metallic Roofing Company, Limited
Manufacturers of
"Eastlake" Shingles, "Empire" Corrugated Iron, etc.
Toronto, Ontario



TO INVESTORS

THOSE WHO, FROM TIME TO TIME, HAVE
FUNDS REQUIRING INVESTMENT
MAY PURCHASE AT PAR

DOMINION OF CANADA DEBENTURE STOCK

IN SUMS OF \$500, OR ANY MULTIPLE THEREOF

Principal repayable 1st October, 1919.

Interest payable half-yearly, 1st April and 1st October by cheque (free of exchange at any chartered Bank in Canada) at the rate of five per cent per annum from the date of purchase.

Holders of this stock will have the privilege of surrendering at par and accrued interest, as the equivalent of cash, in payment of any allotment made under any future war loan issue in Canada other than an issue of Treasury Bills or other like short date security.

Proceeds of this stock are for war purposes only.

A commission of one-quarter of one per cent will be allowed to recognized bond and stock brokers on allotments made in respect of applications for this stock which bear their stamp.

For application forms apply to the Deputy Minister of Finance, Ottawa.

DEPARTMENT OF FINANCE, OTTAWA
OCTOBER 7th, 1916.

ESTABLISHED 1875

The Boiler Inspection and Insurance Co. of Canada

Continental Life Building, Toronto

Issues Policies of Insurance after
A CAREFUL INSPECTION OF
THE BOILERS Covering LOSS
OR DAMAGE TO PROPERTY
and LOSS RESULTING FROM
LOSS OF LIFE AND PERSONAL
INJURIES. :: :: :: ::

Policies Guaranteed by THE
HARTFORD STEAM BOILER
INSPECTION AND INSURANCE
COMPANY. :: :: ::

Assets for Security of Policy-
holders, \$4,552,020.43. :: ::

JOHN L. BLAIKIE	- - -	President
H. N. ROBERTS	-	Vice-President and Sec'y
GEO. C. ROBB	- -	Chief Engineer
A. E. EDKINS	- -	Ass't Chief Engineer

Work has been started on the erection of a planing mill for the C. & J. Hadley Company, 58 Thames Street. Electrical supplies will be purchased by the owners. Estimated cost, \$10,000.

Cobourg.

The Cobourg Steel Company has under consideration the enlarging of its present plant.

Cornwall.

Contract has been awarded for the erection of an addition to the plant of the Canadian Cotton Company, Montreal. Estimated cost, \$32,000.

Delhi.

The plant of the Sovereign Glove, Mitt and Robe Company was recently destroyed by fire. Loss, \$40,000.

Elmira.

The ratepayers passed a by-law to grant certain concessions to the Consolidated Rubber Company, to establish a branch factory here.

Gananoque.

Ratepayers passed a by-law granting the Steel Company of Canada a fixed assessment for ten years.

Guelph.

Plans of a pipe foundry for the Canada Stove and Foundry Company, St. Laurent, Que., are being prepared and tenders will be called about April 1st. The building will be of concrete, mill and brick construction, and will cost approximately \$36,000.

YOU CAN INCREASE YOUR POWER WITHOUT INCREASING THE SIZE OF YOUR POWER PLANT

Your present line shafting is consuming from 15% to 60% of your power.

The Chapman Double Ball Bearing will save this waste and turn it into productive energy.

They will also reduce your oiling and attention to a minimum.

They fit any adjustable hanger and the change can be made with but little delay to you.



In use in over 2,000 Canadian Factories

The Chapman Double Ball Bearing Company

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THE CANADIAN BRIDGE CO., Limited

WALKERVILLE, ONTARIO

—MANUFACTURERS—

RAILWAY AND HIGHWAY BRIDGES

Locomotive Turn Tables. Roofs, Steel Buildings and Structural Iron
Work of all Descriptions

DOMINION BRIDGE COMPANY, Limited

Head Office and Works: Montreal, P.Q.

Branch Offices and Works: Toronto, Ottawa, and Winnipeg

ENGINEERS, MANUFACTURERS AND ERECTORS OF STEEL STRUCTURES

CAPACITY 135,000 TONS

Railway and Highway Bridges, Swing and Bascule Spans, Buildings of all Kinds,
Hemispherical Bottom and other Tanks, Transmission Poles and Towers, Riveted Pipe,
Caissons, Barges, Turntables, Electric and Hand Power Cranes, Hoisting Appliances,
Lift Locks, Hydraulic Regulating Gates, etc. Gear Cutting and General Machine Work.

Large Stock of Standard Structural Material at All Works

STRUCTURAL STEEL For Every Purpose

Estimates Furnished Promptly for all Classes
of Steel Bridges, Buildings, Towers, etc., etc.

5,000 Tons Standard Structural Shapes Carried in Stock
for Quick Delivery.

STRUCTURAL STEEL COMPANY, LIMITED

MONTREAL



Canadian Pacific Railway Bridge, Trenton, Ont.
25 Spans, Weight 2,500,000 Lbs.

The HAMILTON BRIDGE WORKS

Company, Limited

HAMILTON, CANADA

ENGINEERS, MANUFACTURERS, CONTRACTORS

For Steam Railways, Electric Railways, Highways, Etc. For Factories,
Offices, Warehouses, Power Stations, Mill Buildings, or any other purposes

STEEL Bridges Buildings

LACQUERS

Bronzing Liquids (Banana Oil), Amyl Acetate, Incandescent Lamp Coloring, Fusel Oil, and Specialties

MANUFACTURED BY

Cosmos Chemical Co.
PORT HOPE, ONT.

EXPORTERS OF
Reed Organs, Piano Stools,
Music Cabinets.

Catalogue B.



The Goderich Organ Co. Limited
GODERICH, CANADA



Closet Seats,
Flush Tanks,
Medicine Cabinets,
Everything for the Bath Room.
Write for Catalogue C. and Price List.

Headquarters in Canada for

MAPLE SYRUP
MAPLE SUGAR
MAPLE BUTTER
PEANUT BUTTER
MOLASSES
CANE SYRUP
FRUIT PRESERVES
JAM, APPLE PULP
AND CONCENTRATED
JUICE FOR EXPORT

Maples Limited

Manufacturers and Refiners

TORONTO

CANADA

The International Malleable Iron Company, Ltd., Beverley Street, are having plans prepared for a foundry to cost about \$15,000.

Hamilton.

The general masonry and steel work contracts for the erection of an addition to the premises of the Tallman Brass Company have been let. Tenders are now being received on roofing, electrical work, plumbing, heating and painting.

The general masonry, steel and carpentry contracts in connection with the erection of an addition to the premises of the Canadian Shovel and Tool Company have been let and work has commenced.

The Canadian Desmond-Stephan Manufacturing Company, Market Street, propose to build a factory for the manufacture of steam ejectors, etc. Head office, Urbana, Ohio.

The Cummer-Dowsell Company will erect an addition to its plant, to cost \$16,000.

Kitchener.

The Berlin Table Manufacturing Company, Limited, Woodside Street, contemplate the erection of an addition to their premises at an estimated cost of \$3,000.

Work has commenced on the erection of a factory addition on Victoria Street, for the Pollock Phonola Company. Estimated cost, \$6,000.

Lindsay.

Sketch plans for rebuilding the plant of Flavell's Limited, are now being prepared. Estimated cost, \$75,000.

The ratepayers carried a by-law granting the Flavelles Limited, a fixed assessment of \$4,000, the company to erect a \$30,000 cold storage and creamery plant.

London.

P. C. Ketchersid, Wichita, Kan., plans to equip a \$75,000 plant here for manufacturing brooms.

Plans for a reinforced concrete addition to the factory of the Ford Motor Company are being prepared at the company's office, Ford City, Ont., and work will start early in the year. Estimated cost, \$25,000.

Michipicoten Harbor.

A federal charter has been granted to the Michipicoten Power and Paper Company, Limited, with headquarters in Toronto, and a capital stock of \$6,500,000. It is the intention of the company to erect a 150-ton news mill at Michipicoten Harbor, which is about 120 miles west of Sault Ste. Marie on the shores of Lake Superior. The company will also put up a 125-ton ground wood plant. It is expected that the outlay on the mills and the development of the water power will be in the neighborhood of \$6,000,000. A special report by C. H. and P. H. Mitchell, of Toronto, and H. S. Ferguson, of New York, estimates the water power available on the Michipicoten River as 30,000 h.p. Toronto and New York capitalists are interested in the proposition, at the head of which is Lewis Miller Wood, of Toronto, President of the Standard Chemical, Iron and Lumber Company.

Mimico.

Contracts have been awarded in connection with the erection of a factory for the Dominion Abrasive Wheel Company.

New Toronto.

A by-law to grant a fixed assessment to the Brown's Copper and Brass Rolling Mills, Limited, was carried.

THE NICHOLS CHEMICAL COMPANY, LIMITED

MANUFACTURING CHEMISTS

HEAD OFFICE: 222 ST. JAMES STREET, MONTREAL

Branch Office—120 Mill Street, Toronto

WORKS: Capelton, Que., Sulphide, Ont., Barnet, B.C. WAREHOUSES: Montreal, Toronto

Sulphuric Acid
Muriatic Acid
Nitric Acid
Hydrofluoric Acid
Mixed Acid

Sulphate Soda
Sulphide Soda
Hypo-Sulphite Soda
Bi-Sulphite Soda
Phosphate Soda

Glauber's Salt
Blue Vitriol
Sulphate Alumina
Papermaker's Alum
Caustic Soda

Bleaching Powder
Tri-Sodium Phosphate
Ammonia
Salt Cake
Tin Crystals

Agents for Baker & Adamson's Chemically Pure Acids and Chemicals
AGENTS FOR CANADIAN SALT CO.—"WINDSOR" BRAND CAUSTIC SODA & BLEACHING POWDER

DELANY & PETTIT, LIMITED

Joint and Veneer
Glue

Always uniform.

OFFICE:

133 Jefferson Avenue,
TORONTO, ONT.



Special Woodworking
Garnet Paper and
Cloth

WORKS:

105-131 Jefferson Avenue
106-118 Atlantic Avenue

NOTICE

The following are the Factory Inspectors
for the Province of Ontario:

JAMES T. BURKE, Chief Inspector, Toronto
W. T. E. BRENNAGH, Port Arthur
H. A. CLARK, Toronto
MISS M. CARLYLE, Toronto
W. S. FORSTER, Ottawa
A. W. HOLMES, Toronto
ROBT. HUNGERFORD, Toronto
FRED KELLOND, Hamilton
S. J. MALLION, Stratford
MRS. A. BROWN-REDDICK, Toronto
H. J. TUTT, Toronto

Persons having business with any of the Inspectors should communicate
with them at the Parliament Bldgs., Toronto.

Phone Main 5800

HON. JAS. S. DUFF,
Minister of Agriculture.



NOTICE

To Manufacturers, Dealers,
and Users of Steam Boilers.

All steam boilers built in, or entering the Province of Ontario, and
boilers exchanged or repaired, are subject to Government Inspec-
tion as prescribed in the Steam Boilers Act, 3 George V., C. 61.

*Before any work of repair or alteration is commenced
on any boiler, notice must be sent to the Department stat-
ing the nature and extent of the repairs or alterations pro-
posed to be made. If the Chief Inspector should consider
such repairs or alterations of an extensive character, the
boiler must be inspected in accordance with the Regula-
tions by an Inspector authorized under the Act.*

All communications should be addressed to the Steam Boiler
Branch, Department of Public Works, Parliament Bldgs., Toronto.
HON. F. G. MACDIARMID, D. M. MEDCALF,
Minister of Public Works. Chief Inspector of Steam Boilers.



NOTICE

TO STATIONARY AND HOISTING ENGINEERS

Everyone operating a STATIONARY steam plant of 50 h.p. or
over in the Province of Ontario must hold a Stationary Engineer's
Certificate from the Board of Stationary and Hoisting Engineers.
Anyone operating such a plant without a Certificate is liable to the
penalties set forth in the Stationary and Hoisting Engineers' Act.

Everyone operating a HOISTING steam plant working at a
pressure of 20 pounds or over irrespective of horse power, and used
for hoisting in structural operations or excavating purposes, in the
Province of Ontario, must hold a Hoisting Engineer's Certificate
from the Board of Stationary and Hoisting Engineers. Anyone
operating such a plant without a Certificate is liable to the
penalties set forth in the Stationary and Hoisting Engineers' Act.

Application forms for obtaining STATIONARY or HOISTING
Engineers' Certificates may be had upon applying to the Chairman.

HON. F. G. MACDIARMID,
Minister of Public Works and Highways.

W. C. MCGHIE,
Chairman of Board.

Established
1849

BRADSTREET'S

Capital and Surplus - - \$1,500,000

Offices Throughout the Civilized World

Executive Offices: Nos. 346 and 348 BROADWAY, N.Y. CITY, U.S.A.

THE BRADSTREET COMPANY gathers information that reflects the financial condition and
the controlling circumstances of every seeker of mercantile credit. Its business may be
defined as of the merchants, by the merchants, for the merchants. In procuring, verifying,
and promulgating information, no effort is spared, and no reasonable expense considered
too great, that the results may justify its claim as an authority on all matters affecting
commercial affairs and mercantile credit. Its offices and connections have been steadily
extended, and it furnishes information concerning mercantile persons throughout the
civilized world.

Subscriptions are based on the service furnished, and are available only by reputable
wholesale, jobbing and manufacturing concerns, and by responsible and worthy financial,
fiduciary, and business corporations. Specific terms may be obtained by addressing the
Company at any of its offices. CORRESPONDENCE INVITED.

Offices in Canada

Edmonton, Alta.
Halifax, N.S.
Montreal, Que.
St. John, N.B.

Hamilton, Ont.
Ottawa, Ont.
Toronto, Ont.

Winnipeg, Man. Calgary, Alta.

London, Ont.
Quebec, Que.
Vancouver, B.C.
Victoria, B.C.

THOS. C. IRVING, Gen. Man. Western Canada, Toronto

North Bay.

The ratepayers passed a by-law granting a free site and building, amounting to \$15,000, to the North Bay Toy Company. Work will commence on the erection of the building as soon as the site is secured.

Oakville.

The Acme Tire and Rubber Company, 471 Yonge Street, Toronto, contemplate the erection of a factory. J. H. L. Patterson, Toronto, is president of the company.

Oshawa.

The by-law to vote a bonus to the McCulloch Foundry was carried.

Ottawa.

The Rolla L. Crain, Printers, Limited, 836 Bank St., contemplate the erection of premises on Spruce Street, at an approximate cost of \$20,000. President, Rolla L. Crain.

Contract has been awarded for the erection of a factory addition to the plant of the Dominion Wirecloth Manufacturing Company, at a cost of \$4,000.

J. H. Connor, Pretoria Ave., is considering the erection of a large factory for the manufacture of washing machines, and proposes to start work in the spring.

Owen Sound.

The Canadian Malleable Iron Company is making an addition, 40 x 60 feet, concrete construction, to its plant. A few weeks ago another addition, of a more or less temporary nature, 30 x 100 feet, was made to the munition department.

ECONOMY

Rapid production is dependent on the use of **ECONOMICAL TOOLS AND STEEL**. It is safer **not** to specify High Speed Steel, but

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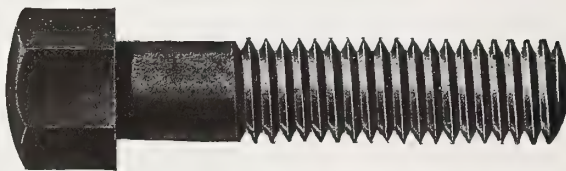
WORKS, LONGUEUIL, P.Q.

John Morrow Screw and Nut Co'y

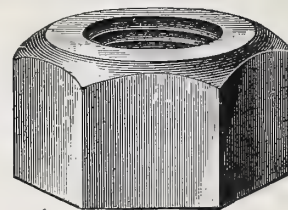
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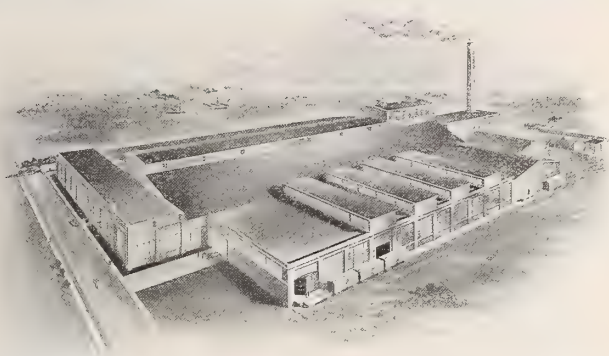
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Main Plant of **MACKINNON, HOLMES & CO., LIMITED, SHERBROOKE, QUE.**

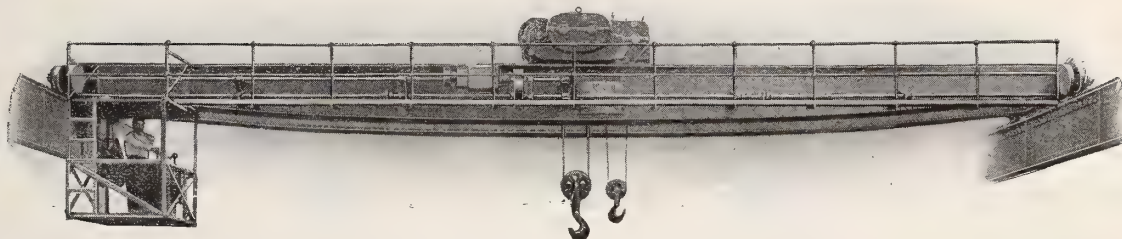
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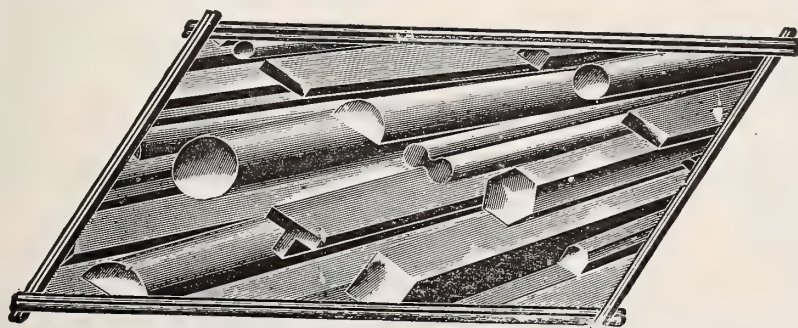
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Get prices before ordering elsewhere.



1917

Greeting:

We trust that the Year Nineteen Hundred and Seventeen will be written into your business history as the most prosperous you have ever enjoyed. And we hope that it may prove but the forerunner of many years of Prosperity, Peace and Goodwill.

Kearney & Foot
Great Western
American
Arcade
Globe
 (MADE IN CANADA)



NICHOLSON FILE CO.
 PORT HOPE
 ONTARIO
 (DEALERS EVERYWHERE)

The Keenan Woodenware Manufacturing Co., Limited, Third Ave. East, contemplate the erection of extensions to their premises, and a by-law to grant them a loan of \$20,000 was carried by the ratepayers.

The erection of a keg mill is contemplated by the Northern Bolt and Screw Co., Limited.

Pembroke.

The Pembroke Machinery Company are having plans prepared for a machine shop of frame construction. The estimated cost is \$12,000. The company will require lathes, pulleys, shafting and belting.

Peterborough.

On December 11th the plant of the Quaker Oats Company was almost entirely destroyed by fire. Estimated loss about \$1,000,000, largely covered by insurance.

The Canadian Metal Products Company has passed into the hands of a group of Montreal capitalists, who may have the plant enlarged. Further information from G. N. Gordon, care Louis A. Gosselin, K.C., Montreal.

Port Arthur.

The Port Arthur Copper Company, Limited, Toronto, propose to build a concentrating plant on the Mine Ventre Copper property, as well as a smaller plant. F. M. Connell, Mining Engineer, Traders' Bank Building, Toronto, is interested in the project.

St. Catharines.

The contract has been let for masonry required in the construction of a foundry for St. Catharines Brass Works, George Street.

Plans are being prepared for an addition to the premises of the Kinleith Paper Company.

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Metals
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MILL SUPPLIES

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ESTABLISHED 1850.

DID YOU EVER NOTICE

that jarring, grinding noise in your machine
shop caused by the metal gears?

Wouldn't you like to stop
that noise? You can do it
by using

NEW PROCESS GEARS
RAWHIDE PINIONS

They last indefinitely too.

Ask us about it.

R. GARDNER & SON, LIMITED

Nazareth, Brennan and Dalhousie Streets
MONTREAL

The Gutta Percha and Rubber Co., Limited, have awarded contract for the erection of an addition to their powerhouse on West Lodge Avenue. Estimated cost, \$3,000.

The Canadian Carbon Company has received a permit for the erection of a new factory on Paton Road, to be three stories high and to cost \$23,500.

A building permit has been issued to the William Neilson Company, Gladstone Ave., for an extension to their factory to cost \$5,000.

Contract has been let for the erection of an addition to the factory of the Toronto Laundry Machine Company. Estimated cost, \$7,500.

The contract for the erection of a manufacturing building for Forgings, Limited, 502 Lumsden Building, has been awarded at an estimated cost of \$3,000.

The factory of the Imperial Varnish Company, 8 Morse Street, was recently damaged by fire to the extent of \$3,500.

Contracts have been awarded in connection with the factory buildings which are now being erected for the Canadian National Carbon Company, 99 Paton Road.

The Dominion Machinery Company, 110 Church Street, are receiving tenders on excavation required in the erection of a factory. Estimated cost of building, \$5,500.

The Kilgour Davenport Company will build an addition to their factory at 44 Osler Ave., to cost \$8,500. A building permit has been issued.

The Bawden Machine Company, 163 Sterling Road, have commenced the erection of an addition to their machine shop, estimated to cost \$3,500.



\$141,017.00 worth of abrasive wheels imported into this country in the last fiscal year, that should have been "MADE IN CANADA."

We can furnish the Canadian made goods of the best natural and artificial abrasives, by the vitrified or silicate process; in the latter, with or without the wire web.

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NORTHERN CAN. SUP. CO.
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Or direct from the manufacturers,

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Buy Matches As You Would Any Other Household Commodity —With An Eye to Full Value!

When you buy Eddy's Matches,
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box of SURE, SAFE Lights

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EDDY'S "SILENT PARLOR" MATCHES

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Banana Groves—Golf—Tarpon Fishing—
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Regular monthly sailings from Montreal in Summer and St. John, N.B., in Winter, calling at Cape Town, Algoa Bay (Port Elizabeth), East London, Port Natal (Durban) and Delagoa Bay in the order named.

Sailings 20th of each month.

All steamers fitted with refrigerators for the carriage of perishable freight.

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New Zealand Shipping Company, Limited

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Australia and New Zealand

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Through bills of lading issued to all points in Australia, New Zealand, Tasmania and other islands of Oceania.

Marine Insurance effected at rates equal to those given from New York.

For rates and other information apply to

**The New Zealand Shipping Co.
LIMITED**

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Trenton.

Contract has been awarded for the erection of a gun-cotton plant at Trenton, for the Imperial Munitions Board, the plant to be known as the "British Chemical Company." Work has started and is being done on a percentage basis. Estimated cost, \$500,000. The project includes about 40 buildings of reinforced concrete and steel construction, and there are from 300 to 500 men on the work. W. H. Gaylord, Sen., is general manager, with head office at Binghamton, N.Y., and temporary office at Trenton.

Welland.

The Empire Cotton Mills, Limited, Queen Street East, have let contract for the construction of reinforced floors, at an approximate cost of \$4,500.

Contract has been awarded to build two more open-hearth furnaces and an extension 100 feet long to the machine shop of the Canadian Steel Foundries. One new open-hearth furnace was recently completed and the one for which the contract has just been let will make six in all, or just double the former capacity of the plant. The total improvements now under way, including equipment, will mean an expenditure of half a million dollars.

Whitby.

By a vote of 280 to 178 the ratepayers rejected the agreement with the proposed Canadian Tractor Company, whereby the town was to guarantee the bonds of the company to the extent of \$100,000, in return for which the company was to build a \$200,000 plant.

Glues, Gelatines Size, Isinglass, Manures, etc.

THE GROVE CHEMICAL CO., LIMITED

Manufacturers (Estd. 1856)

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Offer all grades in large and small quantities for immediate shipment and contract bookings.

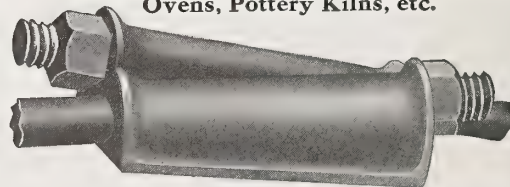
Enquiries for Samples and Quotations promptly attended to, and Orders Booked at Toronto.

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For round Rods $\frac{3}{8}$ to $1\frac{1}{2}$ inch

Flat Bands 2 to 6 inches wide

Best Malleable Iron—Prompt Shipments.

OTTERVILLE MFG. CO., LIMITED
OTTERVILLE, ONT.

SINCE 1896

The Canadian Northern Railway has become a great national institution in Canada, serving :—

GRAIN

Collecting elevators having 26 % of the total capacity of Western Canada are served by the Canadian Northern Railway; licensed elevators having 47 % of the total capacity in Canada are on the Canadian Northern Railway line.

FLOUR

Flour Mills having 51 % of the total daily capacity in Canada are on lines of the Canadian Northern Railway. In British Columbia, the C.N.R. proportion is 90 %; in Alberta 44 %; in Saskatchewan 74 %; in Manitoba 81 %; in Ontario 34 %; in Quebec 90 %; in Nova Scotia 15 %. At Duluth, which is considered separately, the daily capacity is 5,500 barrels per day.

LUMBER

Lumber mills producing 30 % of the output in Canada are served by the Canadian Northern Railway, while 32 % of the total is marketed by water. In British Columbia the Canadian Northern proportion is 34 %; in Alberta, Saskatchewan and Manitoba 70 %; in Ontario 33 %; in Quebec 28 %; in Nova Scotia 28 %.

PULP AND PAPER

Pulp and Paper Plants having 53 % of the capacity of Canada are served by Canadian Northern Railway lines. In Ontario the Canadian Northern proportion is 60 %; in Quebec 64 %; and in Nova Scotia 50 %.



TEST CANADIAN NORTHERN SERVICE

It should be of particular interest to manufacturers to remember, that while the Canadian Northern Railway opened vast areas to settlement, it also sought successfully for the immigrants to people in part the lands so made available. The lines to that great market from the centres of Ontario and Quebec, and from Victoria to Vancouver are now in operation. It will be well worth while to test the service.

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how to reduce
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costs 50% to
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Cut your Insurance in half by having us
instal an

Automatic Fire Sprinkler System

throughout your Factory, Store or Ware-
house.

The Original



The Best

Write us for Estimates

Correspondence Solicited

Warton.

The lumber mill, owned by Johnson, Hunter and Crawford, has been destroyed by fire, the loss being estimated at \$10,000.

QUEBEC.

Drummondville.

Fire at the Aetna Powder Company's plant, on December 5th completely destroyed the boiler department of the factory and the coal elevators.

Hull.

The Hull Steel Foundries, Limited, contemplate an increase in their output by making considerable extensions to their plant at Hull, Que., including the installation of blast furnaces for smelting the ore from the Gatineau district. This furnace installation represents an expenditure of over \$500,000.

Lachute Mills.

E. Charlebois has commenced the erection of a sash and door factory to cost \$10,000.

Maisonneuve.

The general contract for the erection of a factory for the United Shoe Machinery Company, Bennett Street, has been let.

Montreal.

Large additions will be made to the plant of Canadian-Vickers, Limited, according to a statement made by J. W. Norcross, a director of the company.

DARLINGS STEAM APPLIANCES

DARLING BROTHERS LIMITED
Engineers and Manufacturers
MONTREAL, CANADA

Branches: Toronto and Winnipeg Agents: Halifax, St. John, Calgary, Vancouver



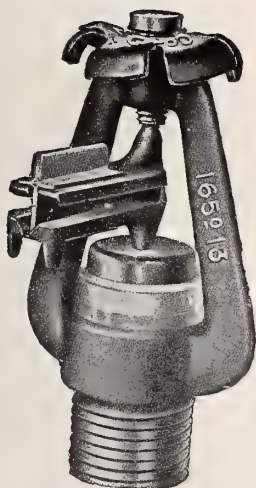
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PUMPS

**CONCRETE
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SPRINKLER TANKS and TOWERS

also wood and steel tanks for Municipal, Railway and Suburban water supply.

All our tanks and towers are built to pass inspection of any Board of Fire Underwriters.

Send for special tank and tower catalogue.

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We do all kinds of hot and electro galvanizing for the trade. Our plant is one of the largest in Canada and our charges reasonable.

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Let us systematize your handling problem.

Canadian Mathews Gravity Carrier Co., Ltd.
484 Richmond St. W., Toronto Patented

It is understood that the Sherwin-Williams Company propose erecting a large plant for the manufacture of dyes after the war.

Contract has been let for the construction of a \$1,000,000 fuse plant for the International Manufacturing Company, a subsidiary of the International Arms and Fuse Company of America. The plant will be built at Montreal. The size of the factory will be 350 x 370 feet.

Laval de Montreal.

Bigonnesse and Bigonnesse, 60 Notre Dame Street East, Montreal, are preparing plans of a factory for the Dominion Aircraft and Manufacturing Company. The estimated cost is \$20,000. Manager of the company is W. H. Parker, 101 St. Luke Street, Montreal.

Point Aux Trembles.

All material required in connection with the factory which is being built for the Parlor Furniture Manufacturing Co., Limited, is being purchased by J. Donald Langelier, St. Denis Street. The work is being done by day labor.

Quebec.

A fire badly damaged the tannery of A. Falardeau, corner of Caron and St. Helen Streets, on Dec. 5th. It is expected the damage will reach \$35,000.

The Dominion Iron and Wrecking Company have secured the plant of the Standard Steel Foundries at Outremont, Que., and that of the Consolidated Brass Foundries at Pointe au Tremble. It is the intention to consolidate these large plants and engage in the manufacture of munitions. New equipment is to be installed, including fifteen electric furnaces of the newest type, at the Consolidated Brass plant.



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Underwear, Hosiery and Sweaters
Laundry, Pulp and Papermakers' Felts, Blankets
Lumbermen's Socks, etc.

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LIMITED

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WHITE VICTORIA
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DYED COTTONS

OF EVERY DESCRIPTION



A Great Canadian Industry

Operating 12 Mills

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Everything in Cotton*

DOMINION TEXTILE CO., Limited

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Magog, Que. ; St. Henry, Que.
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Hochelaga, Que.

Kingston, Ont. ; Halifax, N.S.
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All lines of White and Grey Cottons, Prints, Sheetings, Shirtings, Pillow Cottons, Longcloths, Cambrics, Ducks, Bags, Twills, Drills, Quilts, Bureau Covers, Towels and Towelling, Yarns, Blankets, Rugs, Twines and many other lines used by manufacturers in rubber and other trades.

Quyon.

Within thirty-five miles from Ottawa, at a distance of two miles from the railway station of Quyon, Que., a deposit of molybdenite has been developed by the Canadian-Wood Molybdenite Co. The first shipment of ore was made in April, and since July 1st, the shipments have averaged 250 tons a week of ore containing about 2½ per cent. molybdenite, which for the three months ending Sept. 30th, will total approximately 75 tons of molybdenite. The ore is now being concentrated partly in Ottawa and partly in Denver, Colorado. The product is being shipped to London and to France. A concentrating mill is being put up near the mine.

Rockfield.

Contract has been let for the extension of the forge plant of Canadian Allis-Chalmers, Limited.

St. Johns.

The general contract for the erection of an extension to the plant of the Crucible Steel Company of America, 19 St. Peter Street, Montreal, has been awarded. Owners are in the market for machinery.

SASKATCHEWAN.**Saskatoon.**

The Adams Bros., Harness Manufacturing Company, Limited, McDermot Ave. East, Winnipeg, proposes to build a factory in the spring. Estimated cost, \$125,000.

One of the new toy companies has undergone the process of reorganization, and have taken out a charter under the name of the Castle Mfg. Co., Limited, Toronto.

JULIUS COHEN & JOSEPHY

Foreign **WOOL** *Noils, Wastes*
Domestic *and Shoddy*

Also operating THE YORKSHIRE WOOL STOCK MILLS, TORONTO
Manufacturers of Pulled Shoddies

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HEATERS

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MONTREAL

TORONTO
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CALGARY

HAMILTON
SASKATOON
EDMONTON

BUYERS' GUIDE TO CANADIAN MANUFACTURES

A List of Articles Which Will Enable the Purchaser to Know the Manufacturers of Made-in-Canada Goods. For Rates for Insertion in this Department Write to the Advertising Manager of Industrial Canada, Toronto.

ABRASIVE MATERIALS

- *Canadian Hart Wheels, Ltd., Hamilton, Ont.
- *Dominion Abrasive Wheel Co., New Toronto, Ont.

ACCOUNT BOOKS

- *The Brown Bros., Ltd., Toronto.

ACETYLENE GAS BURNERS

- Economic Acetylene Burner Co., Toronto.

ACIDS

- *The Grasselli Chemical Co., Ltd., Toronto.
- *The Nichols Chemical Co., Ltd., Montreal.

ADVERTISING NOVELTIES

- Lawson & Jones, Ltd., London, Ont.

AERATED BEVERAGES

- Charles Gurd & Co., Ltd., Montreal, Que.
- J. J. McLaughlin, Ltd., Toronto.

AIR COMPRESSORS

- *Canadian Ingersoll-Rand Co., Sherbrooke, P.Q.
- *Jenckes Machine Co., Sherbrooke, P.Q.
- *Smart-Turner Machine Co., Ltd., Hamilton, Ont.

ALCOHOL

- The St. Hyacinthe Distillery Co. Ltd., St. Hyacinthe, Que.
- *Hiram Walker & Sons, Limited, Walkerville, Ont.

ALE

- E. L. Drewry, Winnipeg, Man.

ALUMINUM

- *Northern Aluminum Co., Ltd., 1305 Traders Bank, Toronto.

ALUMINUM CASTINGS

- *Tallman Brass & Metal Co., Hamilton, Ont.

AMMONIA

- Canadian Ammonia Co., Ltd., Toronto.

ANGLE BARS

- *The Steel Company of Canada, Limited, Hamilton, Ont.

ASBESTOS:

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS SHEATHING:

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS SHEET AND PISTON PACKINGS

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS STEAM PIPE AND BOILER COVERINGS

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS TEXTILES:

- *Eureka Mineral Wool & Asbestos Co., Toronto.

AUTOMOBILE ACCESSORIES,

- *Northern Electric Co., Limited, Montreal.
- *Tallman Brass & Metal Co., Hamilton, Ont.

AUTOMOBILE PARTS

- *Dominion Forge & Stamping Co., Walkerville, Ont.

AWNING CORD (cotton)

- Hamilton Cotton Co., Hamilton, Ont.

AXLES

- Canada Forge Co., Ltd., Welland, Ont.
- Guelph Spring & Axle Co., Ltd., Guelph, Ont.

AXLES, carriage and automobile
Guelph Spring & Axle Co., Ltd., Guelph, Ont.

BABBITT METAL

- Alonzo W. Spooner, Limited, Port Hope, Ont.
- *The Canada Metal Co., Toronto.
- *Tallman Brass & Metal Co., Hamilton, Ont.

BACON

- E. W. Fearman Co., Ltd., Hamilton, Ont.

BAGS

- *Scythes & Co., Ltd., Toronto.

BAGS, Cotton

- The Canadian Bag Co., Ltd., Montreal, Que.

BAGS, jute

- The Canadian Bag Co., Ltd., Montreal, Que.
- *Scythes & Co., Ltd., Toronto.

BAGS, travelling

- J. Eveleigh & Co., Ltd., Montreal, Que.
- Lamontagne, Ltd., Montreal, Que.
- The M. Langmuir Mfg. Co., of Toronto, Ltd., Toronto.

BAKING JAPAN

- *Berry Bros., Ltd., Winnipeg, Man.

BAND RESAWS:

- *P. B. Yates Machine Co., Ltd., Hamilton, Ont.

BANK AND OFFICE RAILINGS

- *The Geo. B. Meadows, Toronto, Wire, Iron & Brass Works Co., Ltd., Toronto.
- *Canada Wire and Iron Works, Hamilton, Ont.

BANK FITTINGS

- The Canadian Office & School Furniture Co., Ltd., Preston, Ont.

BANK RAILINGS AND CAGES

- *Canada Wire and Iron Goods Co., Hamilton, Ont.
- *Dennis Wire & Iron Works Co., London.

BANK SIGNS AND FITTINGS

- *Tallman Brass & Metal Co., Hamilton, Ont.

BARRELS, steel, and containers

- *Smart-Turner Machine Co., Ltd., Hamilton, Ont.

BARs, iron

- London Rolling Mill Co., Limited, London, Ont.

BARs, steel

- London Rolling Mill Co., Limited, London, Ont.

BASEBALL GOODS

- A. J. Reach Co., Brantford, Ont.

BATHS, enamelled

- Amherst Foundry Co., Ltd., Amherst, N.S.

BATTERIES, dry

- The Canadian National Carbon Co., Ltd., Toronto.
- Canadian Carbon Company, Ltd., Toronto.

BEARINGS

- *The Chapman Double Ball Bearing Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BEARINGS, bronze

- *Tallman Brass & Metal Co., Hamilton, Ont.

BEARINGS, pillow block and up-right

- *Dodge Mfg. Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BEARINGS

- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BEDS, camp folding

- *Otterville Mfg. Co., Ltd., Otterville, Ont.

BEEF

- E. W. Fearman Co., Ltd., Hamilton, Ont.

BEER

- E. L. Drewry, Winnipeg, Man.

BELTING, chain conveyors

- *Canadian Link Belt Co., Toronto.

BELTING, chains

- *Dodge Mfg. Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BELTING, Elevator

- *Canadian Consolidated Rubber Co., Ltd., Montreal, Que.

BELTING, leather

- The Beardmore Belting Co., Ltd., Toronto.
- *J. L. Goodhue & Co., Danville, P.Q.

- *Sadler & Howarth, Montreal.

- *The D. K. McLaren Belting Co., Ltd., Montreal.

- *The J. C. McLaren Belting Co., Ltd., Montreal.

BELTING, rubber

- *Canadian Consolidated Rubber Co., Ltd., Montreal, Que.
- *Gutta Percha & Rubber, Limited, Toronto.

BENT GOODS

- The Crown Lumber Co., Woodstock, Ont.

BICYCLES AND ACCESSORIES

- *Canada Cycle and Motor Co., Ltd., Toronto.

BISCUITS

- The Montreal Biscuit Co., Montreal, Que.

BLACK SHEETS

- *A. C. Leslie & Co., Montreal.

BLANKETS

- Slingsby Mfg. Co., Ltd., Brantford, Ont.
- J. Walsham & Son, Ltd., Bolton, Ont.

BLANKETS, horse

- Slingsby Mfg. Co., Ltd., Brantford, Ont.
- J. Walsham & Son, Limited, Bolton, Ont.

BLASTING ACCESSORIES

- Canadian Explosives, Ltd., Montreal, Que.

BLEACHING POWDER

- Canadian Salt Co., Ltd., Windsor, Ont.

BLOWERS

- *Sheldons, Ltd., Galt, Ont.

BOATS OF ALL KINDS

- Peterboro Canoe Co., Ltd., Peterboro, Ont.

BOILER COMPOUND and OILS

- Electric Boiler Compound Co., Ltd., Guelph, Ont.

BOILER PRESERVATIVES

- *Beveridge Paper Co., Limited, Montreal, Que.

BOILERS

- *M. Beatty & Sons, Ltd., Welland, Ont.
- *Darling Bros., Montreal.
- *Goldie & McCulloch Co., Limited, Galt, Ont.
- John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.
- *Polson Iron Works, Ltd., Toronto.
- J. & R. Weir, Montreal, Que.
- Taylor-Forbes Co., Ltd., Guelph, Ont.
- *Jenckes Machine Co., Sherbrooke, Que.
- *The Waterous Engine Works Co., Ltd., Brantford.

BOILERS, hot water or steam.

- Steel & Radiation, Ltd., Toronto.
- Warden King, Ltd., Montreal, Que.

BOILERS, steam.

- *Jenckes Machine Co., Sherbrooke, Que.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.
- Steel and Radiation Ltd., Toronto.
- Warden King, Ltd., Montreal, Que.
- *The Waterous Engine Works Co., Ltd., Brantford, Ont.

BOILERS, steam and brass work

- *The Waterous Engine Works Co., Ltd., Brantford, Ont.

BOILER STANDS

- Anthes Foundry Ltd., Toronto.

BOLSTERS

- *Canadian Car & Foundry Co., Ltd., Montreal, Que.

BOLTS

- *The National Acme Mfg Co., Montreal, Que.

BOLTS AND NUTS

- *The Canadian Tube & Iron Co., Ltd., Montreal, Que.
- *The Steel Company of Canada, Limited, Hamilton, Ont.
- Starr Mfg. Co., Ltd., Dartmouth, N.S.

BOOKBINDERS

- R. G. McLean, Toronto.
- *The Brown Bros., Ltd., Toronto.

BOOKCASES

- *Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

BOOKCASES, sectional (Gunn)

- The George McLagan Furniture Co., Ltd., Stratford, Ont.

BOOKLETS

- Stone Limited, Toronto.
- R. G. McLean, Toronto.

BOOKS, blank

- *The Brown Bros., Ltd., Toronto.

BOOTS AND SHOES

- Ames-Holden-McCready, Ltd., Montreal, Que.
- J. Leckie Co., Ltd.
- The John Ritchie Co., Ltd., Quebec, Que.

BOXES, cellular board:

- *The Thompson & Norris Co. of Canada, Ltd., Niagara Falls.

BOXES, rattle and soap

- The Arlington Co. of Canada, Ltd., Toronto.

BOXES AND SHOOKS, wooden

- The C. Beck Mfg. Co., Ltd., Penetanguishene, Ont.

BOXES, wooden

- G. & J. Esplen, Montreal, Que.
- Barchard & Co., Ltd., Toronto.

BRAIDS AND TRIMMINGS

- The Moulton Mfg. Co., Limited, Montreal.

BRAKE SHOES

- *Canadian Hart Wheels, Limited, Hamilton, Ont.

BRANDS, burning

- Pritchard, Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

BRASS BOLTS AND NUTS

- *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS, BRONZE and ALUMINUM LETTERS

- *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS ENGRAVERS

- Pritchard, Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

BRASS FOUNDERS AND FINISHERS

- *The Booth-Coulter Copper & Brass Co., Ltd., Toronto.
- *Tallman Brass & Metal Co., Hamilton, Ont.



By Royal Warrant

“Canadian Club” Whisky

Fully Ripened in Wood. Age Guaranteed by Government.

QUALITY UNEXCELLED

Distilled and Bottled by

HIRAM WALKER & SONS
LIMITED

Walkerville, Canada

LONDON

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WINNIPEG

BRASS GOODS

*The Booth-Coulter Copper & Brass Co., Ltd., Toronto.
 *Mueller Mfg. Co., Sarnia.
 The Garth Co., Montreal, Que.
 The James Morrison Brass Mfg. Co., Ltd., Toronto.
 *The Kerr Engine Co., Ltd., Walkerville, Ont.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS PLATES

Geo. Booth & Son., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS RODS, SHEETS AND PLATES

*Brown's Copper and Brass Rolling Mills, Ltd., New Toronto.

BRASS SIGNS AND MEMORIALS

*Tallman Brass & Metal Co., Hamilton, Ont.

BRASS TUBING, seamless

Canadian Seamless Wire Co., Ltd., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS WIRE

Canadian Seamless Wire Co., Ltd., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS WORK, church

Pritchard, Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

BRASS WORK, special

Bawden Machine Co., Ltd., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.
 *Booth-Coulter Copper & Brass Co., Ltd., Toronto.
 *The Watrous Engine Works Co., Ltd., Brantford, Ont.

BRICK

National Brick Co. of Laprairie, Laprairie, P.Q.
 Port Credit Brick Co., Port Credit, Ont.

BRICK, enamel

National Brick Co. of Laprairie, Laprairie, P.Q.

BRICK, pressed

National Brick Co. of Laprairie, Laprairie, P.Q.

BRICK, rubbing

*Canadian Hart Wheels, Limited, Hamilton, Ont.

BRICK, sewer

National Brick Co. of Laprairie, Laprairie, P.Q.

BRIDGES, Railway and Highway

*Dominion Bridge Co., Montreal.
 *Hamilton Bridge Works Co., Ltd., Walkerville, Ont.
 *The Canadian Bridge Co., Ltd., Hamilton, Ont.
 *The Structural Steel Co., Limited, Montreal, Que.

BROOMS

Simms, T. S., & Co., Limited, St. John, N.B.
 Stevens-Hepner Co., Limited, Port Elgin, Ont.

BRUSHES

Simms, T. S., & Co., Limited, St. John, N.B.
 Stevens-Hepner Co., Limited, Port Elgin, Ont.

BRUSHES, carbon

Canadian National Carbon Co., Ltd., Toronto.

BUCKET TANKS

*The General Fire Equipment Co., Limited, Toronto, Ont.

BUCKLES, shoe and coat

Parmenter & Bulloch Co., Limited, Gananoque, Ont.

BUILDING BLOCKS, vitrified, salt glazed

Standard Clay Products, Ltd., St. Johns, Que.

BUILDING FELT and PAPER

*Eureka Mineral Wool & Asbestos Co., Toronto.
 *Paterson Manufacturing Company, Toronto and Montreal.

BUILDERS, ship

*Polson Iron Works, Limited, Toronto.
 J. & R. Weir, Montreal, Que.

BURLAPS

The Canadian Bag Co., Limited, Montreal, Que.
 *Scythes & Co., Ltd., Toronto.

BURLAPS, decorative

Dominion Oil Cloth Co., Limited, Montreal, Que.

CABLE, Copper and galvanized

*The Steel Co. of Canada, Ltd., Hamilton, Ont.

CABLES, transmission and telephones

*Eugene F. Phillips Electrical Works, Ltd., Montreal, Que.

CABLES, Transmission and Cable

*Northern Electric Co., Limited, Montreal, Que.

CABLES, wire

The Dominion Wire Rope Co., Ltd., Montreal, Que.
 *The B. Greening Wire Co., Ltd., Hamilton, Ont.

CALENDARS, ADVERTISING

NOVELTIES, etc.
 Rolph & Clark, Limited, Toronto.
 Lawson & Jones, Limited, London, Ont.
 Stone Limited, Toronto.

CAMERAS

Canadian Kodak Co., Limited, Toronto.

CAMPERS' OUTFITTERS

Slingsby Mfg. Co., Ltd., Brantford, Ont.

CANOEES

Peterboro Canoe Co., Ltd., Peterboro, Ont.

CANS, baking powder, etc.

American Can Co., Montreal and Hamilton.
 A. R. Whittall, Montreal, Que.

CANS, fruit

American Can Co., Montreal and Hamilton.
 A. R. Whittall, Montreal, Que.

CANS, tin

A. R. Whittall, Montreal, Que.
 American Can Co., Montreal and Hamilton.

CANS, iron, lead and putty

A. R. Whittall, Montreal, Que.

CANVAS

*Scythes & Co., Ltd., Toronto.

CAPS, cloth

John W. Peck & Co., Ltd., Montreal, Que.

CARBIDE

*Canada Carbide Co., Ltd., Montreal, Que.
 *Union Carbide Co. of Canada, Ltd. Works, Welland, Ont. Head Office, Toronto.

CARBON BRUSHES

Canadian Carbon Co., Limited, Toronto.

CARBON PRODUCTS

Canadian Carbon Co., Limited, Toronto.

CARBONS, arc light

Canadian Carbon Co., Limited, Toronto.

The Canadian National Carbon Co., Ltd.

CARBONS, flame

Canadian Carbon Co., Limited, Toronto.

CARBONIC ACID GAS

Canadian Carbonate Company, Ltd., Montreal, Que.

*Canada Carbide Co., Ltd., Montreal, Que.

*Union Carbide Co., Welland, Ont.

CARD RECORD SYSTEMS

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

CARPETS AND RUGS

Toronto Carpet Mfg. Co., Limited, Toronto.

CARPETS AND RUGS, Axminster and ingrain

Toronto Carpet Mfg. Co., Limited, Toronto.

CARPETS AND RUGS, Brussels and Wilton

Toronto Carpet Mfg. Co., Limited, Toronto.

CARPET YARNS, worsted and wool

Toronto Carpet Mfg. Co., Limited, Toronto.

CARRIAGES, baby, etc.

Canada Furniture Manufacturers, Ltd., Woodstock, Ont.

CARRIERS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

CARRIERS, box and barrel

*Canadian Mathews Gravity Carrier Co., Limited, Toronto.

CARRIERS, brick

*Canadian Mathews Gravity Carrier Co., Limited, Toronto.

*Richards-Wilcox Canadian Co., Ltd., London, Ont.

CARS

*Canadian Car & Foundry Co., Ltd., Montreal, Que.

*National Steel Car Co., Limited, Hamilton, Ont.

CARS, industrial

*Sheldons, Ltd., Galt.

CARTONS, lithographed

Harris Lithographing Co., Toronto.

CASTINGS

*Tallman Brass & Metal Co., Hamilton, Ont.

CASTINGS, aluminum

*Booth-Coulter Copper & Brass Co., Limited, Toronto.

CASTINGS, brass

*Tallman Brass & Metal Co., Hamilton, Ont.

*Booth-Coulter Copper & Brass Co., Limited, Toronto.

CASTINGS, brass and bronze

*Tallman Brass & Metal Co., Hamilton, Ont.

CASTINGS, gray iron

*Dodge Mfg. Co., Toronto.

*Canadian Car & Foundry Co., Ltd., Montreal, Que.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

*Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.

John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.

CASTINGS, malleable iron

*Galt Malleable Iron Co., Ltd., Galt, Ont.

*Pratt & Letchworth Co., Brantford, Ont.

CASTINGS, steel

*Canadian Steel Foundries, Ltd., Montreal, Que.

*Dominion Steel Foundry Co., Ltd., Hamilton, Ont.

*Hull Iron and Steel Foundry, Ltd., Hull, P.Q.

*Joliette Steel Co., Ltd., Montreal.

*Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.

CATALOGUE MAKERS

Grip, Ltd., Toronto.

R. G. McLean, Toronto.

CAUSTIC SODA

Canadian Salt Co., Ltd., Windsor, Ont.

CELLBOARD

Adams Cellboard Co., Toronto, Ont.

CEMENT GUNS

Steel and Radiation, Ltd., Toronto.

CHAIN, silent drive

*Canadian Link Belt Co., Toronto.

CHAIRS

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

CHAIRS, assembly hall

Stratford Mfg. Co., Ltd., Stratford, Ont.

CHAIRS, folding

Stratford Mfg. Co., Ltd., Stratford, Ont.

CHAIRS, rattan and upholstered

Imperial Rattan Co., Ltd., Stratford, Ont.

CHEMICALS

*Cosmos Chemical Co., Port Hope.

*The Grasselli Chemical Co., Ltd., Toronto.

*The Nichols Chemical Co., Ltd., Montreal, Que.

CHEMICAL LABORATORY

APPARATUS
 The Geo. M. Hendry Co., Limited, Toronto.

CHICLETS AND CHEWING GUM

Canadian Chewing Gum Co., Ltd., Toronto.

CIGARS

Ed. Youngheart & Co., Limited, Montreal, Que.

CIGARETTES AND TOBACCO

Philip Morris & Co., Limited, Montreal, Que.

CIRCULAR CUTTERS, solid steel

The Peter Hay Knife Co., Limited, Galt, Ont.

CLAM SHELL BUCKETS

*M. Beatty & Sons, Ltd., Welland, Ont.

CLOCKS, TIME

*International Time Recording Co. of Canada, Ltd., Toronto.

CLOCKS, WATCHMEN'S

*The General Fire Equipment Co., Limited, Toronto.

CLOSET SEATS

*Goderich Organ Co., Goderich, Ont.

CLOTHING

John W. Peck & Co., Ltd., Montreal, Que.

Mackenzie & Co., Ottawa, Ont.

CLOTHING, leather and sheepskin lined coats

*A. R. Clarke & Co., Ltd., Toronto.

CLOTHING, Mackinaw

The Carss Mackinaw Clothing Co., Ltd., Orillia, Ont.

CLOTHES LINES, cotton

Hamilton Cotton Co., Hamilton, Ont.

CLUTCHES

*Dodge Mfg. Co., Ltd., Toronto.

CLUTCHES, conveyors

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

COAL

*Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N.S.
 Standard Fuel Co., Toronto.

COBALT OXIDE

The Coniagas Reduction Co., Ltd., St. Catharines, Ont.

COCOA AND CHOCOLATE

PREPARATIONS
 Walter Baker & Co., of Canada, Ltd., Montreal, Que.

COFFEE

S. H. Ewing & Sons, Montreal, Que.

COLD DRAWN SHAPES, flats, squares and hexagons

*The Canadian Drawn Steel Co., Ltd., Hamilton, Ont.

*Union Drawn Steel Co., Limited, Hamilton, Ont.

COLD STORAGE DOORS

John Hillock & Co., Ltd., Toronto.

COLLAR BUTTONS

The Arlington Co. of Canada, Ltd., Toronto.

COLLARS

The Standard Shirt Co., Limited, Montreal, Que.

COLLARS, coated linen

Parsons & Parsons Canadian Co., Hamilton, Ont.

COLORS

Brandram-Henderson, Limited, Montreal, Que.

A. Ramsay & Son Co., Montreal, Que.

COMBS, fine dressing and name

The Arlington Co. of Canada, Ltd., Toronto.

COMMERCIAL STATIONERS

Rolph & Clark, Ltd., Toronto.

COMMERCIAL STATIONERY

*Brown Bros., Ltd., Toronto.

CONCENTRATORS

*Jenckes Machine Co., Sherbrooke, Que.

CONCRETE COATINGS, PAINTS, ETC.

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

The Imperial Varnish & Color Co., Limited, Toronto.

CONDUITS FOR INTERIOR**WIRING**

*Conduits Company, Ltd., Toronto.

CONFECTIONERY

Ganong Bros., Ltd., St. Stephens, N.B.
Moirs, Limited, Halifax, N.S.
The Montreal Biscuit Co., Montreal, Que.

CONTAINER BOARD—strong container

Bathurst Lumber Co., Ltd., Bathurst, N.B.

CONTRACTORS' PLANT

*M. Beatty & Sons, Ltd., Welland, Ont.

CONVEYORS

*Canadian Mathews Gravity Carrier Co., Toronto.

*Dodge Mfg. Co., Ltd., Toronto.

*Jenckes Machine Co., Sherbrooke, Que.

COPPER

*Eugene F. Phillips, Electrical Works, Limited, Montreal.
*Booth-Coulter Copper & Brass Co., Limited, Toronto.

COPPER SHEETS AND PLATES

*Booth-Coulter Copper & Brass Co., Limited, Toronto.

*Tallman Brass & Metal Co., Hamilton, Ont.

COPPERSMITHS

*Booth-Coulter Copper & Brass Co., Limited, Toronto.

COPPER TUBING, seamless

Canadian Seamless Wire Co., Ltd., Toronto.

*Booth-Coulter Copper & Brass Co., Limited, Toronto.

COPPER WIRE

Canadian Seamless Wire Co., Ltd., Toronto.

CORKS

S. H. Ewing & Sons, Montreal, Que.

CORK CARPET

Dominion Oil Cloth Co., Ltd., Montreal, Que.

CORRUGATED PAPER BOXES

Adams Cellboard Co., Toronto.

*Hinde & Dauch Paper Co., Toronto.

*Martin Corrugated Paper & Box Co., Limited, Toronto.

*The Thompson & Norris Co. of Canada, Ltd., Niagara Falls, Ont.

CORSETS

Dominion Corset Co., Quebec, Que.

COTTONS

*Dominion Textile Co., Limited, Montreal, Que.

*Montreal Cottons, Ltd., Valleyfield, P.Q.

COTTONADES

Hamilton Cotton Co., Hamilton, Ont.

COUPLERS

*Canadian Steel Foundries, Ltd., Welland, Ont.

CRANES

*Northern Crane Works, Walkerville, Ont.

CRANES, locomotive

*Canadian Link Belt Co., Toronto.

COUPLINGS

*Dodge Mfg. Co., Ltd., Toronto.

CRANKSHAFTS

Canada Forge Co., Ltd., Welland, Ont.

CREAM CHEESE, Ingersoll

The Ingersoll Packing Co., Limited, Ingersoll, Ont.

CREAM SEPARATORS AND MILK CLARIFIERS

De Laval Dairy Supply Co., Peterboro, Ont.

CREAMERY AND CHEESE FACTORY MACHINERY AND SUPPLIES

De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

CREOSOTED MATERIALS

*Paterson Mfg. Co., Toronto and Montreal.

CRUSHED STONE

The Hagersville Contracting Co., Limited, Hagersville, Ont.

CRUSHING ROLLS

*Jenckes Machine Co., Sherbrooke, Que.

CUPOLAS

*Sheldons, Ltd., Galt, Ont.

*Northern Crane Works, Limited, Walkerville, Ont.

CUPS, presentation

Standard Silver Co., Toronto.

CUPS, grease and oil

*The Canadian Winkley Co., Ltd., Windsor, Ont.

CURLED HAIR

*Delany and Pettit, Ltd., Toronto.

CURTAINS, chenille

Hamilton Cotton Co., Hamilton, Ont.

CUTLERY

Standard Silver Co., Toronto.

CUTTERS, (Machine)

*Pratt & Whitney Co., Dundas.

DENIMS

Hamilton Cotton Co., Hamilton, Ont.

DERAILS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

DESIGNERS

Ontario Engraving Co., Hamilton, Ont.

DESIGNERS and PRINTERS OF BOOKLETS, ETC.

Grip, Ltd., Toronto.

DESKS

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

DINING ROOM SUITES

The George McLagan Furniture Co., Limited, Stratford, Ont.

DIES

*Butterfield & Co., Rock Island, P.Q.

*Pratt & Whitney Co., Dundas.

DISINFECTING APPARATUS

Spramotor Co., London, Ont.

DOOR HANGERS

*Richards Wilcox Canadian Co., Ltd., London, Ont.

DRAPERY AND UPHOLSTERY GOODS

Daly & Morin, Montreal, Que.

DREDGES

*M. Beatty & Sons, Limited, Welland, Ont.

DRESSING, belt

Sadler & Haworth, Montreal, Que.

DRESS AND CLOAK TRIMMINGS

J. Henry Peters Co., 1 Mincing St., Toronto.

DRILLS

*John Morrow Screw & Nut Co., Limited, Ingersoll, Ont.

*Pratt & Whitney Co., Dundas.

DRILLS, rock

*Canadian Ingersoll Rand Co., Sherbrooke, Que.

*Jenckes Machine Co., Sherbrooke, Que.

DRIFT BOLTS OR SPIKES

London Rolling Mill Co., Limited, London, Ont.

DROP FORGINGS

*Canadian Billings & Spencer, Ltd., Welland, Ont.

DRUMS, steel, and containers

*Smart-Turner Machine Co., Ltd., Hamilton, Ont.

DRY CELLS, electric

Canadian Carbon Co., Limited, Toronto.

DRY COLORS

P. D. Dods & Co., Ltd., Montreal, Que.

The Imperial Varnish & Color Co., Limited, Toronto.

R. C. Jamieson & Co., Ltd., Montreal, Que.

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

DUMB WAITERS

Turnbull Elevator Mfg. Co., Toronto.

DURABLE WIRE ROPE

The Dominion Wire Rope Co., Ltd., Montreal, Que.

DYNAMITE

Canadian Explosives, Limited, Montreal, Que.

DYNAMOS

Consolidated Electric Co., Limited, Toronto.

*Jones & Moore Electric Co., Ltd., Toronto.

*The Canadian Crocker-Wheeler Co., Limited, St. Catharines, Ont.

DYNAMOS, plating

*Jones & Moore Electric Co., Ltd., Toronto.

EIDERDOWN

Galt Knitting Co., Ltd., Galt.

ELECTRIC APPLIANCES

*Canadian Crocker-Wheeler Co., Limited, St. Catharines, Ont.

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

ELECTRICAL COMPOUNDS

Standard Paint Co. of Canada, Ltd., Montreal, Que.

ELECTRICAL AND GAS FIXTURES

The Garth Co., Montreal, Que.

The James Morrison Brass Mfg. Co., Limited, Toronto.

*Tallman Brass and Metal Co., Hamilton, Ont.

ELECTRIC LAMPS

Packard Electric Co., Limited, Toronto.

ELECTRIC PLATE WARE

Roden Bros., Ltd., Toronto.

ELECTRIC BATTERIES

Canadian Carbon Co., Limited, Toronto.

ELECTROTYPING

Central Press Agency, Toronto.

ELECTRICAL SUPPLIES

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

*Jones & Moore Electric Co., Ltd., Toronto.

*Northern Electric Co., Limited, Montreal, Que.

ELECTRO-SILVER PLATED WARE

Standard Silver Co., Toronto.

ELEVATING MACHINERY

*Canadian Mathews Gravity Carrier Co., Toronto.

ELEVATORS

*Jenckes Machine Co., Sherbrooke, Que.

Turnbull Elevator Manufacturing Company, Toronto.

*The Waterous Engine Works Co., Ltd., Brantford, Ont.

*Northern Crane Works, Limited, Walkerville, Ont.

ELEVATORS FOR ALL PURPOSES

*The Waterous Engine Works Co., Limited, Brantford, Ont.

ELEVATOR GATES AND DOORS

Turnbull Elevator Mfg. Co., Ltd., Toronto.

ELEVATOR GUARDS

*The Geo. B. Meadows, Toronto

Iron and Brass Goods Works Co., Limited, Toronto.

*Canada Wire and Iron Works, Hamilton, Ont.

*ELEVATORS, hydraulic and electric

John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.

EMERY DRESSERS AND STANDS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

EMERY GRINDERS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

EMERY WHEELS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

EMERY WHEEL GUARDS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

ENAMELS

R. C. Jamieson & Co., Limited, Montreal, Que.

ENAMEL MANUFACTURERS AND DECORATORS

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

ENAMEL AND TIN WARE

McClary Mfg. Co., London, Ont.

ENGINES

*E. Leonard & Sons, London, Ont.

*Goldie & McCulloch Co., Limited, Galt, Ont.

J. & R. Weir, Montreal, Que.

*Jenckes Machine Co., Sherbrooke, Ont.

*Polson Iron Works, Limited, Toronto.

*Sheldons, Ltd., Galt, Ont.

*The Waterous Engine Works Co., Limited, Brantford, Ont.

ENGINES, gas and gasoline

*Goold-Shapley-Muir Co., Limited, Brantford, Ont.

*Massey-Harris Co., Ltd., Toronto.

*ENGINES, gasoline, tractor, plowing and threshing

*Sawyer-Massey Co., Ltd., Hamilton, Ont.

ENGINES, hoisting

*M. Beatty & Sons, Welland, Ont.

*The Waterous Engine Works Co., Limited, Brantford, Ont.

ENGINES, steam plowing and threshing

Sawyer-Massey Co., Limited, Hamilton, Ont.

ENGRAVERS

Grip, Limited, Toronto.

Ontario Engraving Co., Hamilton, Ont.

Rolph & Clark, Limited, Toronto.

Stone, Limited, Toronto.

ENGRAVERS, half-tone

Grip, Limited, Toronto.

Ontario Engraving Co., Hamilton, Ont.

ENGRAVERS, wood

Ontario Engraving Co., Hamilton, Ont.

ENGRAVERS AND PRINTERS

steel plate

American Bank Note Co., Ottawa, Ont.

ENGRAVERS AND PRINTERS

banknote

American Bank Note Co., Ottawa, Ont.

ENGRAVING

*J. L. Jones Engraving Company, Toronto.

ENGRAVING, copper and steel

plate

Pritchard-Andrews Co. of Ottawa, Limited, Ottawa, Ont.

ENSILAGE AND STRAW CUTTERS

J. Fleury's Sons, Aurora, Ont.

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

ENVELOPES

Barber-Ellis Co., Ltd., Toronto.

Canada Envelope Co., Montreal, Que.

EXCELSIOR

*Delany & Pettit, Ltd., Toronto.

EXCELSIOR PADS

*Delany & Pettit, Ltd., Toronto.

Parmenter & Bulloch Co., Limited, Gananoque, Ont.

EXPERTS IN PATENT CAUSES

Ridout & Maybee, Toronto.

EXPLOSIVES, high

Canadian Explosives Ltd., Montreal, Que.

FACE PLATE JAWS

Ker & Goodwin, Brantford, Ont.

FACTORY SUPPLIES, cheese and creamery

De Laval Dairy Supply Co., Ltd., Montreal, Que.

J. Henry Peters Co., 1 Mincing St., Toronto.

FANS

*Sheldons, Limited, Galt, Ont.

FASTENERS, belt

*Sadler & Haworth, Montreal, Que.

FELTS, PULP AND PAPER MAKERS

Ayers Limited, Lachute Mills, P.Q.

FENCES AND GATES

*Dennis Wire & Iron Works Co., London, Ont.

*Canada Wire and Iron Works, Hamilton, Ont.

FENCING AND GATES, woven

wire

Banwell Hoxie Wire Fence Co., Hamilton, Ont.

*Canada Wire and Iron Goods Co., Hamilton, Ont.

*FENCING, wire

C. H. Johnson & Sons, Limited, Montreal, Que.

FIBRE PAILS

*The E. B. Eddy Co., Ltd., Hull, Que.

FIBRE, vulcanized

*Beveridge Paper Co., Ltd., Montreal.

FILES

Henry Disston & Sons, Limited, Toronto.

*The Nicholson File Co., Port Hope, Ont.

FIRE ENGINES

*The Watrous Engine Works Co., Limited, Brantford, Ont.

FIRE ESCAPES

*Canada Wire and Iron Goods Co., Hamilton, Ont.
*Dennis Wire & Iron Works Co., London, Ont.

FIRE EXTINGUISHERS

*R. S. Bickle Co., Woodstock.
*A. B. Ormsby Co., Ltd., Toronto.
*Booth-Coulter Copper and Brass Co., Limited, Montreal, Que.
*The General Fire Equipment Co., Limited, Toronto, Ont.

FIRE FIGHTING APPARATUS

*The Watrous Engine Works Co., Limited, Brantford, Ont.

FIRE HOSE

*Canadian Consolidated Rubber Co., of Canada, Limited, Montreal, Que.
*Gutta Percha and Rubber, Ltd., Toronto.

FIRE PREVENTION MATERIAL

*Chicago Bridge & Iron Works, Bridgeburg, Ont.
*Eureka Mineral Wool & Asbestos Co., Toronto.
*The General Fire Equipment Co., Limited, Toronto.

FIRE PROOF WINDOWS AND DOORS

*A. B. Ormsby Co., Ltd., Toronto.
*Pedlar People, Ltd., Oshawa, Ont.
*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

FIRE SPRINKLER SYSTEMS

*Chicago Bridge & Iron Works, Bridgeburg, Ont.
*The General Fire Equipment Co., Limited, Toronto.
*Purdy Mansell Co., Toronto.
*H. G. Vogel Co., Montreal, Que.

FIRE AND WATER DEPARTMENT SUPPLIES

*Chicago Bridge & Iron Works, Bridgeburg, Ont.
*The Garth Co., Montreal, Que.

FISH, Atlantic Sea-Foods

Maritime Fish Corporation Ltd., Montreal, Que.

FITTINGS FOR SOIL PIPE

Anthes Foundry, Ltd., Toronto.

FITTINGS, steam

Warden King, Ltd., Montreal, Que.

FLAGS

*Scythes & Co., Limited, Toronto.

FLASHLIGHTS

Canadian Carbon Co., Toronto.

FLOORING, hardwood

Seaman Kent Co., Ltd., Meaford, Ont.

FLUE LINERS

Standard Clay Products, Ltd., St. Johns, Que.

FORGES

*Sheldons, Limited, Galt, Ont.

FORGINGS

Canada Forge Co., Ltd., Welland, Ont.

*The Steel Co. of Canada, Limited, Hamilton, Ont.

FORGINGS, drop

*Dominion Forge and Stamping Co., Walkerville, Ont.

FOUNDRY EQUIPMENT

*Northern Crane Works, Limited, Walkerville, Ont.

FOUNTAIN FRUITS and Juices

J. J. McLaughlin, Ltd., Toronto.

FRICTION CLUTCH PULLEYS

*Dodge Mfg. Co., Ltd., Toronto.

FROGS AND CROSSINGS, manganese

Canadian Ramapo Iron Works, Ltd., Niagara Falls, Ont.

FUEL

Standard Fuel Co., Toronto.

FUR GARMENTS, men's and women's

Holt, Renfrew, Ltd., Quebec.

FUR GOODS

John W. Peck & Co., Limited, Montreal, Que.

FUR TRIMMINGS, ornaments and buttons

J. Henry Peters Co., 1 Mincing St., Toronto.

FURNACES

McClary Mfg. Co., London, Ont.
The Jas. Smart Mfg. Co., Limited, Brockville, Ont.

FURNACES, hot air

Bedford Stove Co., Bedford, Que.

FURNACES, oil burning

*Canadian Hoskins Co., Walkerville, Ont.
*Mechanical Engineering Works, Montreal, Que.

FURNITURE, hall

The George McLagan Furniture Co., Limited, Stratford, Ont.

FURNITURE, office

The Canadian Office and School Furniture Co., Ltd., Preston, Ont.

FURNITURE, reed and rattan

Imperial Rattan Co., Ltd., Stratford, Ont.

FUSES

*Economy Fuse and Mfg. Co., Montreal.

GALVANIZED IRON

*A. C. Leslie & Co., Montreal.

GALVANIZED SHEETS

*Dominion Sheet Metal Co., Hamilton, Ont.

GALVANIZERS

Acme Stamping & Tool Works, Ltd., Hamilton, Ont.

*Ontario Wind Engine and Pump Co., Limited, Toronto.

GASOLINE ENGINES

*Ontario Wind & Pump Co., Ltd., Toronto.

De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

GASOLINE FIRE ENGINES

*The Watrous Engine Works Co., Ltd., Brantford, Ont.

GASOLINE MOTORS, "Imperial" Marine

Bruce Stewart & Co., Ltd., Charlottetown, P.E.I.

GASOLINE STORAGE SYSTEMS, special underground

S. F. Bowser & Co., Toronto.

GASOLINE

*The Imperial Oil Co., Limited, Toronto.

GEARS, cut

*Hamilton Gear & Machine, Toronto.

GENERATORS

*Canadian Crocker-Wheeler Co., Ltd., St. Catharines, Ont.

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

GINs

The Melchers Gin & Spirits Distillery Co., Ltd., Montreal, Que.

GLASSWARE

Dominion Glass Co., Limited, Montreal, Que.

GLASSWARE, cut

Roden Bros., Ltd., Toronto.

GLASS FOR BUILDINGS

Toronto Plate Glass Importing Co., Limited, Toronto.

GLASS BENDERS

Toronto Plate Glass Importing Co., Limited, Toronto.

GLASS, mirror

Toronto Plate Glass Importing Co., Limited, Toronto.

GLOVES AND MITTS

*A. R. Clarke & Co., Ltd., Toronto.

Craig, Cowan Co., Ltd., Toronto.

GLUE

Canada Glue Co., Ltd., Brantford.
*Delany and Pettit, Ltd., Toronto.

GOLD-FILLED WIRE AND PLATE

Canadian Seamless Wire Co., Toronto.

GOLD AND SILVER REFINERS

Canadian Seamless Wire Co., Toronto.

GRAIN CRUSHERS (Rapid Easy)

J. Fleury's Sons, Aurora, Ont.

GRAPE JUICE

J. J. McLaughlin, Ltd., Toronto.

The Welch Co., Ltd., St. Catharines.

GRATES

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

GRAVITY CARRIERS

*Canadian Mathews Gravity Carrier Co., Toronto.

GRILLES, metal

*Canada Wire & Iron Goods Co., Hamilton, Ont.
*Dennis Wire & Iron Works Co., London, Ont.

GRINDERS, Pedestal and Bench

*Canadian Hart Wheels, Limited, Hamilton, Ont.

GRINDING and Polishing Machinery

*Canadian Hart Wheels, Limited, Hamilton, Ont.

GRINDING WHEELS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

*The Dominion Abrasive Wheel Co., Limited, New Toronto.

GRINDSTONES

*Richards-Wilcox Canadian Co., Limited, London, Ont.

GUNN SECTIONAL BOOKCASES

The Geo. McLagan Furniture Co., Limited, Stratford, Ont.

GUY ANCHORS

B. J. Coghlin Co., Ltd., Montreal.

GYPSUM, crushed

*Albert Mfg. Co., Hillsborough, N.B.

GYPSUM PRODUCTS

*Manitoba Gypsum Co., Ltd., Winnipeg, Man.

De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

HALL FURNITURE

The Geo. McLagan Furniture Co., Limited, Stratford, Ont.

HAMS

F. W. Fearman Co., Ltd., Hamilton, Ont.

*HANDLES (Axe, pick, sledge hammers, etc.)

The Lachute Shuttle Co., Limited, Lachute Mills, P.Q.

HANGERS

*Dodge Mfg. Co., Ltd., Toronto.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

HARDWARE

*Richards-Wilcox Canadian Co., Limited, London, Ont.

Taylor-Forbes Co., Limited, Guelph, Ont.

The Jas. Smart Mfg. Co., Limited, Brockville, Ont.

HARDWOOD FLOORING

Wilson Bros. Limited, Collingwood, Ont.

HARDWOOD INTERIOR FINISH

Wilson Bros., Ltd., Collingwood, Ont.

*HARDWOOD VENEER DOORS TO DETAIL

Wilson Bros., Ltd., Collingwood, Ont.

HARNESSES

Lamontagne Ltd., Montreal, Que.

HATS, men's straw

The Crown Hat Co., Limited, Galt, Ont.

*HATS, ladies' and children's straw

The Crown Hat Co., Limited, Galt, Ont.

*HATS, ladies' and children's felt and beaver

The Crown Hat Co., Limited, Galt, Ont.

HATS, ladies' felt and straw

Toronto Hat Mfg. Co., Toronto.

HAULAGE, Wire Rope

The Dominion Wire Rope Co., Ltd., Montreal, Que.

HEATERS

*Watrous Engine Works Co., Ltd., Brantford, Ont.

HEATERS, feed water

*Darling Bros., Ltd., Montreal.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

HEATING APPLIANCES

*C. A. Dunham Co., Ltd., Toronto.

*Darling Bros., Ltd., Montreal.

*Sheldons, Limited, Galt, Ont.

HEATING SYSTEMS

*C. A. Dunham Co., Ltd., Toronto.

HESSIANS

The Canadian Bag Co., Limited, Montreal, Que.
*Scythes & Co., Limited, Toronto.

HINGES

*The Steel Co. of Canada, Limited, Hamilton, Ont.

HOISTS

*M. Beatty & Sons, Ltd., Welland, Ont.

*Northern Crane Works, Limited, Walkerville, Ont.

*HOISTS, electric and pneumatic

*M. Beatty & Sons, Ltd., Welland, Ont.

*Canadian Link Belt Co., Toronto.

*Northern Crane Works, Limited, Walkerville, Ont.

HOISTING MACHINERY

*M. Beatty & Sons, Ltd., Welland, Ont.

*Northern Crane Works, Limited, Walkerville, Ont.

HOSE, fire

*Canadian Consolidated Rubber Co., Limited, Montreal, Que.

HOSE, half, Imperial

Kingston Hosiery Co., Ltd., Kingston, Ont.

HOSE, rubber

*Canadian Consolidated Rubber Co., Limited, Montreal, Que.

*Gutta Percha & Rubber, Limited.

HYDRAULIC PRESSES

*Bawden Machine Co., Limited, Toronto.

*William R. Perrin, Ltd., Toronto.

ICE CREEPERS

Farmer & Bulloch Co., Limited, Gananoque, Ont.

ICE-MAKING MACHINERY

The Linde Canadian Refrigeration Co., Limited, Montreal, Que.

INCUBATORS & BROODERS

Lee Mfg. Co., Ltd., Pembroke, Ont.

INJECTORS, automatic and autopoistive

Penberthy Injector Co., Limited, Windsor, Ont.

INTERLOCKING RUBBER TILING

*Gutta Percha & Rubber Mfg. Co., of Toronto, Limited, Toronto.

INVERTS

Standard Clay Products, Ltd., St. Johns, Que.

IRON

*Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N.S.

IRON AND STEEL BARS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

IRON, refined bar

Starr Mfg. Co., Ltd., Dartmouth, N.S.

IRON STAIRWAYS

*Canada Wire & Iron Goods Co., Hamilton, Ont.

*Dennis Wire & Iron Works Co., London, Ont.

IRONWORK, architectural

*Canada Wire & Iron Goods Co., Hamilton, Ont.

IRONWORK, ornamental

*Canada Wire & Iron Goods Co., Hamilton, Ont.

IRON, LEAD AND PUTTY

A. R. Whittall, Montreal, Que.

JAM, canned goods, etc.

E. D. Smith & Son, Limited.

JAPANS, enamels, etc.

A. Muirhead Co., Ltd., Toronto.

JOINTERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

JELLY POWDER

S. H. Ewing & Sons, Montreal, Que.

JEWELRY, enamelled souvenir

Caron Bros., Montreal, Que.

JEWELRY, gold-filled

Caron Bros., Montreal, Que.

JOIST HANGERS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

KELSEY WARM AIR GENERATOR

The Jas. Smart Mfg. Co., Limited, Brockville, Ont.

KILNS

*Sheldons, Limited, Galt, Ont.

KINDLING

Standard Fuel Co., Toronto.

KNIFE GRINDERS

*W. H. Banfield & Sons, Toronto.

KNITTED GOODS

*Penman's, Limited, Paris, Ont.

KNIVES

Henry Disston and Sons, Toronto.
The Peter Hay Knife Co., Limited, Galt, Ont.
Simonds Canada Saw Co., Limited, Montreal, Que.

KNIVES, pulp and paper

Henry Disston and Sons, Toronto.
The Peter Hay Knife Co., Limited, Galt, Ont.

KODAKS AND PHOTOGRAPHIC SUPPLIES

Canadian Kodak Co., Ltd., Toronto.

LABELS

Lawson & Jones, Ltd., London, Ont.

LABELS, lithographed

Harris Lithographing Co., Toronto.

LACE LEATHER

F. C. McCordick, St. Catharines, Ont.

*Sadler & Haworth, Montreal, Que.

*The D. K. McLaren Belting Co., Limited, Montreal, Que.

*The J. C. McLaren Belting Co., Limited, Montreal, Que.

LADDERS

Stratford Mfg. Co., Ltd., Stratford, Ont.

LADDERS, step.

*Otterville Mfg. Co., Ltd., Otterville, Ont.

LADLES, foundry

*Northern Crane Works, Limited, Walkerville, Ont.

LAGER

E. L. Drewry, Winnipeg, Man.

LARD

F. W. Fearman Co., Ltd., Hamilton, Ont.

LATH

The C. Beck Mfg. Co., Ltd., Penetanguishene, Ont.

LATHE CHUCKS

Ker & Goodwin, Brantford, Ont.

LATHE-DOGS

Canadian Billings & Spencer, Ltd., Welland, Ont.

LAUNCHES

Peterboro Canoe Co., Ltd., Peterboro, Ont.

LAWN MOWERS

Taylor-Forbes Co., Limited, Guelph, Ont.

LAWN SWINGS

Stratford Mfg. Co., Ltd., Stratford, Ont.

LAVATORIES, enameled

Amherst Foundry Co., Limited, Amherst, N.S.

LAUNDRY SINKS

Amherst Foundry Co., Limited, Amherst, N.S.

LEAD

*The Consolidated Mining and Smelting Co. of Canada, Limited, Trail, B.C.

LEAD GRINDERS

Benjamin Moore & Co., Limited, Toronto.

LEAD SHEET

Toronto Plate Glass Importing Co., Limited, Toronto.

LEAD PIPE

*The Steel Co. of Canada, Limited, Hamilton, Ont.

Toronto Plate Glass Importing Co., Limited, Toronto.

*The Canada Metal Co., Toronto.

LEATHER

The Robson Leather Co., Limited, Oshawa, Ont.

LEATHER, bookbinders'

Clarke & Clarke, Ltd., Toronto.

LEATHER, fancy

Clarke & Clarke, Ltd., Toronto.

LEATHER GOODS

Lamontagne, Ltd., Montreal, Que.

LEATHER, hemlock sole

The Breithaupt Leather Co., Ltd., Berlin, Ont.

LEATHER, patent colt and side leather

*A. R. Clarke & Co., Ltd., Toronto.

LEATHER, sheep skin, etc.

Clarke & Clarke, Ltd., Toronto.

LEATHER, upholstering

Clarke & Clarke, Ltd., Toronto.

LEATHER, upper

A. Davis & Son, Ltd., Kingston, Ont.

LINK BELTING

*Canadian Link Belt Co., Toronto.

*The Dodge Mfg. Co., Ltd., Toronto.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

LINOLEUM

Dominion Oil Cloth Co., Limited, Montreal, Que.

LITHOGRAPHED BUSINESS STATIONERY

Business Systems, Ltd., Toronto.

LITHOGRAPHED TIN WARE

*MacDonald Mfg. Co., Limited, Toronto.

LITHOGRAPHERS

American Bank Note Company, Ottawa, Ont.

Harris Lithographing Co., Toronto.

Stone, Limited, Toronto.

Rolph & Clark, Limited, Toronto.

LOCKERS

*Canada Wire & Iron Works Co., Hamilton, Ont.

*Dennis Wire & Iron Works Co., London, Ont.

*Geo. B. Meadows, Wire, Iron and Brass Works Co., Toronto.

LOCOMOTIVE BLOCKS

Standard Clay Products, Limited, St. Johns, Que.

LOCOMOTIVES, industrial

*Montreal Locomotive Works, Ltd., Montreal, Que.

LOCOMOTIVE & MARINE BRASS WORKS

The James Morrison Brass Mfg. Co., Limited, Toronto.

LOOSE LEAF, BINDERS AND FORMS

Business Systems, Ltd., Toronto.

LOOSE LEAF SYSTEMS

Copeland-Chatterton Co., Limited, Brampton, Ont.

LOOSE LEAF SUPPLIES

The Esdale Press, Ltd., Edmonton.

LUBRICATORS, steam sight feed

Penberthy Injector Co., Limited, Windsor, Ont.

LUGS, for silos and water tanks

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

*Otterville Mfg. Co., Ltd., Otterville, Ont.

LUMBER

The C. Beck Mfg. Co., Ltd., Penetanguishene, Ont.

G. & J. Esplen, Montreal, Que.

LUMBER, asbestos

*Eureka Mineral Wool & Asbestos Co., Toronto.

LUMBER, spruce and pine, cedar railway ties and shingles

Bathurst Lumber Co., Ltd., Bathurst, N.B.

LUMBERING BLANKETS

Slingsby Mfg. Co., Ltd., Brantford, Ont.

LUMBER, red pine and spruce

Gillies Bros., Ltd., Braeside, Ont.

LUMBER, spruce, fir, larch and cedar

Fernie Lumber Co., Ltd., Fernie, B.C.

LUMBER, white pine

Gillies Bros., Ltd., Braeside, Ont.

MACHINE TOOLS

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, conveying

*Canadian Link Belt Co., Toronto.

*Canadian Mathews Gravity Carrier Co., Limited, Toronto.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

MACHINERY, flour mill

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

MACHINERY, grinding

*Canadian Hart Wheels, Limited, Hamilton, Ont.

MACHINERY, hoisting, etc.

*Polson Iron Works, Limited, Toronto.

J. & R. Weir, Montreal, Que.

*M. Beatty & Sons, Ltd., Welland, Ont.

*Northern Crane Works, Limited, Walkerville, Ont.

MACHINERY, ice cream

J. J. McLaughlin, Ltd., Toronto.

MACHINERY, iron working

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, pulp mill

*The Watrous Engine Works Co., Limited, Brantford, Ont.

MACHINERY, punching and shearing

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, railroad and car shop

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, roadmaking

Sawyer-Massey Co., Limited, Hamilton, Ont.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

MACHINERY, sawmill

The E. Long Mfg. Co., Limited, Orillia, Ont.

P. Payette & Co., Pentanguishene, Ont.

W. P. Plant, Hastings, Ont.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

*Yates, P. B., Machine Co., Ltd., Hamilton, Ont.

MACHINERY, sheet metal working

Brown, Boggs Co., Ltd., Hamilton, Ont.

MACHINERY, special

Bawden Machine Co., Limited, Toronto.

MACHINERY, tannery

W. P. Plant, Hastings, Ont.

MACHINERY, transmission

*Dodge Mfg. Co., Ltd., Toronto.

*Goldie & McCulloch Co., Limited, Galt, Ont.

MACHINERY, woodworking

*Yates, P. B., Machine Co., Ltd., Hamilton, Ont.

Preston Woodworking Machinery Co., Ltd., Preston.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

MACHINE WRENCHES

*Canadian Billings & Spencer, Ltd., Welland, Ont.

MACHINES, painting

Spramotor Co., London, Ont.

MAGNESITE

Canadian Carbonate Co., Limited, Montreal, Que.

MALT

*Hiram Walker & Sons, Limited, Walkerville, Ont.

MAPLE PRODUCTS

*Maples, Limited, Toronto.

MAPS AND MAP MOUNTING

The Geo. M. Hendry Co., Limited, Toronto.

Stone, Limited, Toronto.

MARTINGALE RINGS AND SLIDE LOOPS

The Arlington Co. of Canada, Ltd., Toronto.

MATCHERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

MATCHES

*The E. B. Eddy Co., Ltd., Hull.

MECHANICAL STOKERS

*The Jones Underfeed Stoker Co., Ltd., Toronto.

MEDICINES, patented and pharmaceutical

Dr. Ed. Morin & Cie., Ltd., Quebec.

METAL, babbitt

*Canada Metal Co., Toronto.

*Tallman Brass and Metal Co., Hamilton, Ont.

Alonzo W. Spooner, Limited, Port Hope, Ont.

METAL CEILING

*Metallic Roofing Co., Limited, Toronto.

METAL LATH

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

METAL PACKING

*Garlock Packing Company, Hamilton, Ont.

METAL, spinning and stamping

The Booth-Coulter Copper and Brass Co., Limited, Toronto.

METAL SHINGLES

*The Metallic Roofing Co. of Canada, Limited, Toronto.

METAL SIDING

*The Metallic Roofing Co., Ltd., Toronto.

MILK DEALERS' MACHINERY AND SUPPLIES

De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

MILLBOARD, asbestos

*Eureka Mineral Wool & Asbestos Co., Toronto.

MILLING CUTTERS

Pratt and Whitney Company of Canada, Dundas, Ont.

MITTS AND GLOVES (Indian, tan, red deerskins)

Holt, Renfrew Ltd., Quebec, Que.

A. R. Clarke & Co., Ltd., Toronto.

MOCCASINS AND SLIPPERS (Indian tanned leathers)

Holt, Renfrew Ltd., Quebec, Que.

MORTISERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

MOTOR CARS

*Ford Co. of Canada, Ford, Ont.

*Willys-Overland, Ltd., West Toronto.

MOTORS, electric (alternating current)

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

Consolidated Electric Co., Limited, Toronto.

*Jones & Moore Electric Co., Ltd., Toronto.

*Canadian Crocker-Wheeler Co., Ltd., St. Catharines, Ont.

*T. & H. Electric Co., Hamilton.

MOTORS, electric (direct current)

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

Consolidated Electric Co., Limited, Toronto.

*Jones & Moore Electric Co., Ltd., Toronto.

*T. & H. Electric Co., Hamilton.

MOTORS, electric (repairing)

Consolidated Electric Co., Limited, Toronto.

*T. & H. Electric Co., Hamilton.

MOULDERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

NAILS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

NAILS, copper

Parmenter and Bulloch Co., Ltd., Gananoque, Ont.

NAILS, wire

Parmenter and Bulloch Co., Ltd., Gananoque, Ont.

The Graham Nail Works, Toronto.

NAPHTHA

*The Imperial Oil Co., Limited, Toronto.

NICKEL OXIDE

Coniagas Reduction Co., Limited, St. Catharines, Ont.

NUTS

*John Morrow Screw & Nut Co., Limited, Ingersoll, Ont.

*The National Acme Mfg. Co., Montreal, Que.

*The Steel Co. of Canada, Limited, Hamilton, Ont.

OAKUM, plumbers, Canadian Navy

Factory Waste and Metal Co., Montreal, Que.

*Scythies & Co., Ltd., Toronto.

OAT CRUSHERS AND FLAKERS
J. Fleury's Sons, Aurora, Ont.**OFFICE DESKS**

*Goderich Organ Co., Goderich, Ont.

OFFICE EQUIPMENT

*Office Specialty Co., Newmarket, Ont.

OFFICE FURNITURE

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

OILS

Brandram-Henderson, Ltd., Montreal, Que.

A. Ramsay & Son Co., Montreal, Que.

Sherwin-Williams Co. of Canada, Limited, Montreal, Que.

OIL FILTRATION AND CIRCULATING SYSTEMS

S. F. Bowser & Co., Toronto.

OIL STORAGE SYSTEMS, self-measuring

S. F. Bowser & Co., Toronto.

OIL COMPANIES

*Canadian Oil Cos., Toronto.

Commercial Oil Co., Ltd., Hamilton, Ont.

*Imperial Oil Co., Toronto.

OILS (Petroleum products)

*British American Oil Co., Limited, Toronto.

*The Imperial Oil Co., Limited, Toronto.

OILS, road

*Paterson Manufacturing Company, Toronto and Montreal.

OILCLOTHS, floor and table

Dominion Oil Cloth Co., Limited, Montreal, Que.

ORGANS

*Goderich Organ Co., Goderich, Ont.

Karn-Morris Piano and Organ Co., Ltd., Woodstock, Ont.

Thomas Organ & Piano Co., Woodstock, Ont.

ORGANS, pipe

Casavant Freres, St. Hyacinthe, Que.

Karn-Morris Piano and Organ Co., Ltd., Woodstock, Ont.

ORGANS, parlor

*Goderich Organ Co., Goderich, Ont.

ORNAMENTAL IRON WORK

*Canada Wire & Iron Goods Co., Hamilton, Ont.

*Dennis Wire & Iron Works Co., London, Ont.

*The Geo. B. Meadows, Toronto Iron and Brass Goods Works Co., Limited, Toronto.

Ovens, portable bake

Bedford Stove Co., Bedford, Que.

Mackenzie & Co., Ottawa, Ont.

Peerless Overall Co., Rock Island, Que.

Walker Pant and Shirt Co., Walkerville and Chatham, Ont.

The Standard Shirt Co., Limited, Montreal, Que.

OVERCOATINGS

Rosamond Woollen Co., Almonte, Ont.

OVERHEAD RUNWAYS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

OXY-ACETYLENE WELDING

*L'Air Liquide Society, Montreal.

OXYGEN

*L'Air Liquide Society, Montreal.

PACKING BOXES

Barchard & Co., Limited, Toronto.

PACKING, engine

*Garlock Packing Co., Hamilton.

PACKING, rubber

*Canadian Consolidated Rubber Co., Limited, Montreal, Que.

*Gutta Percha & Rubber, Limited, Jenkins Bros., Ltd., Montreal, Que.

PAISLS AND TUBS, wooden

The C. Beck Mfg. Co., Limited, Penetanguishene, Ont.

PAINTERS' SUPPLIES

A. Muirhead Co., Ltd., Toronto.

PAINTS

R. C. Jamieson & Co., Limited, Montreal, Que.

PAINTS and VARNISHES

A. Muirhead Co., Ltd., Toronto.

Benjamin Moore & Co., Limited, Toronto.

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

The Imperial Varnish & Color Co., Limited, Toronto.

The Staneland Co., Ltd., Victoria, B.C.

A. Ramsay & Sons Co., Montreal, Que.

*The Dougall Varnish Co., Limited, Montreal, Que.

Standard Paint Co. of Canada, Limited, Montreal, Que.

*Toch Bros., Toronto.

PAINTS, barn and bridge

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

PAINTS, preservative

Standard Paint Co. of Canada, Limited, Montreal, Que.

*Paterson Manufacturing Company, Toronto and Montreal.

*Toch Bros., Toronto.

PAPER, book

Barber Paper & Coating Mills, Ltd., Georgetown, Ont.

PAPER BOXES

King Paper Box Co., Ltd., Montreal, Que.

*Rudd Paper Box Co., Limited, Toronto.

PAPERS, bond

*Howard Smith Paper Mills, Ltd., Montreal.

*Rolland Paper Co., Ltd., Montreal, Que.

PAPER, envelope

Provincial Paper Mills Limited, Georgetown, Ont.

The Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER KRAFT, wrapping printing and waterproof

*Beveridge Paper Co., Ltd., Montreal, Que.

PAPER, news

*The Riordon Pulp and Paper Co., Montreal, Que.

PAPER, wrapping, printing and specialties

*Beveridge Paper Co., Ltd., Montreal.

*The Riordon Pulp and Paper Co., Montreal, Que.

PAPERS, building

Bathurst Lumber Co., Ltd., Bathurst, N.B.

*The Riordon Pulp and Paper Co., Montreal, Que.

Standard Paint Co. of Canada, Ltd., Montreal, Que.

PAPER, coated, book and label

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, coated cover

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, coated box board

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, enamelled blotting

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, gummed tapes

Gummed Papers, Ltd., Brampton, Ont.

PAPER, label

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, ledger

*Howard Smith Paper Mills, Ltd., Montreal.

*Rolland Paper Co., Limited, Montreal, Que.

The Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER, super-book

The Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER, wall

Stauntons, Ltd., Toronto.

PAPER, Waxed

Business Systems, Ltd., Toronto.

PAPER, writing

The Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER, writing, high-grade

*Howard Smith Paper Mills, Ltd., Montreal.

*Rolland Paper Co., Limited, Montreal, Que.

PARK SEATS

Stratford Mfg. Co., Ltd., Stratford, Ont.

PARLOR SUNDRIES

The Geo. McLagan Furniture Co., Limited, Stratford, Ont.

PATENTS

Fetherstonhaugh & Co., Toronto.

Ridout and Maybee, Toronto.

PATENT LITIGATION

Ridout and Maybee, Toronto.

PAY ROLL AUDITS

*International Time Recording Co. of Canada, Ltd., Toronto.

PEAS AND BEANS FOR SEED

W. P. Niles, Ltd., Wellington, Ont.

PERFORATED METALS

*Canada Wire & Iron Goods Co., Hamilton, Ont.

PERFORATED MUSIC ROLLS

The Otto Higel Co., Ltd., Toronto.

PERFUMES AND TOILET PREPARATIONS

Sovereign Perfumes Ltd., Toronto.

PETROLEUM PRODUCTS

*The Imperial Oil Co., Limited, Toronto.

PHOTOMAILERS

*The Thompson & Norris Co. of Canada, Ltd., Niagara Falls, Ont.

PIANOS

Dominion Organ & Piano Co., Ltd., Bowmanville, Ont.

*Gourlay, Winter and Leeming, Toronto.

Karn-Morris Piano and Organ Co., Limited, Woodstock, Ont.

PIANO ACTIONS

The Otto Higel Co., Ltd., Toronto.

PIANO KEYS

The Otto Higel Co., Ltd., Toronto.

PIANOS, player

*Gourlay, Winter and Leeming, Toronto.

Karn-Morris Piano and Organ Co., Limited, Woodstock, Ont.

PIANO, player actions

The Otto Higel Co., Ltd., Toronto.

PIANO STOOLS and BENCHES

*Goderich Organ Co., Goderich, Ont.

PICKLES AND CATSUPS

T. A. Lytle Co., Ltd., Toronto.

PIG IRON

*The Steel Co. of Canada, Limited, Hamilton, Ont.

PINE DOORS, SASH, MOULDINGS, ETC.

Wilson Bros., Limited, Collingwood, Ont.

PINS, society, emblems and badges

Caron Bros., Montreal, Que.

PIPE, cast iron, for water and gas

National Iron Works, Ltd., Toronto.

PIPE COUPLINGS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

PIPE COVERINGS

*Eureka Mineral Wood & Asbestos Co., Toronto.

PIPE ORGANS

Karn-Morris Piano and Organ Co., Limited, Woodstock, Ont.

PIPES, culvert

Standard Clay Products, Ltd., St. Johns, Que.

PIPE AND NIPPLE, black and galvanized

*Canadian Tube & Iron Co., Ltd., Montreal, Que.

PIPE, sewer

Hamilton and Toronto Sewer Pipe Co., Limited, Hamilton, Ont.

Standard Clay Products, Ltd., St. Johns, Que.

PIPE, soil and fittings

Authes Foundry, Ltd., Toronto and Winnipeg.

Warden King Lt., Montreal, Que.

PIPE AND TUBES, wrought

*Page-Hersey Iron Tube and Lead Co., Ltd., Toronto.

PIPE, threading and cutting off machines

John H. Hall & Sons, Limited, Brantford, Ont.

PISTON RODS

*The Canadian Drawn Steel Co., Limited, Hamilton, Ont.

*Union Drawn Steel Co., Limited, Hamilton, Ont.

PLANERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

PLANING MILLS

G. & J. Esplen, Montreal, Que.

PLOWS

J. Fleury's Sons, Aurora, Ont.

PLUMBERS' SUPPLIES

The Garth Co., Montreal, Que.

The James Morrison Brass Mfg. Co., Ltd., Toronto.

PLUMBING APPLIANCES

Standard Sanitary Mfg. Co., Ltd., Limited, Toronto.

PLUMBING SUPPLIES

Toronto Plate Glass Importing Co., Limited, Toronto.

PNEUMATIC MACHINERY

*Canadian Ingersoll-Rand Co., Sherbrooke, P.Q.

POLE LINE MATERIAL, (wooden insulator top pins, side blocks, pole steps, cross arms)

The Lachute Shuttle Co., Limited, Lachute Mills, P.Q.

POLES, curtain

Daly & Morin, Montreal, Que.

POLES, flag

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

POLES, telegraph and telephone, cedar

Ferne Lumber Co., Ltd., Fernie, B.C.

PORK PACKERS AND CHEESE EXPORTERS

The Ingersoll Packing Co., Limited, Ingersoll, Ont.

POSTS, split cedar fence

Ferne Lumber Co., Ltd., Fernie, B.C.

POSTERS

Stone, Limited, Toronto.

POULTRY SUPPLIES AND MEDICINES

Lee Mfg. Co., Ltd., Pembroke, Ont.

POWDER, blasting

Canadian Explosives, Ltd., Montreal, Que.

POWER PRESSES

*Canadian Boomer & Boschert Press Co., Limited, Montreal, Que.

*William R. Perrin, Ltd., Toronto.

PRESERVATIVE PAINT

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

PRESSES, baling and filter

*Canadian Boomer & Boschert Press Co., Ltd., Montreal, Que.

*William R. Perrin, Ltd., Toronto.

PRESSES, hydraulic

*Canadian Boomer & Boschert Press Co., Limited, Montreal, Que.

*Canadian Boomer & Boschert Press Co., Limited, Montreal, Que.

*Canadian Boomer & Boschert Press Co., Limited, Montreal, Que.

*Canadian Boomer & Boschert Press Co., Limited, Montreal, Que.

*Canadian Boomer & Boschert Press Co., Limited, Montreal, Que.

*Canadian Boomer & Boschert Press Co., Limited, Montreal, Que.

*Canadian Boomer & Boschert Press Co., Limited, Montreal, Que.

*Canadian Boomer & Boschert Press Co., Limited, Montreal, Que.

PRESSES, veneer

*William R. Perrin, Ltd., Toronto.
*Canadian Boomer & Boschert Press Co., Ltd., Montreal, Que.

PRINTERS

Rous & Mann, Ltd., Toronto.
R. G. McLean, Toronto.

PRINTERS, catalogue

R. G. McLean, Toronto.

PRINTING AND LITHOGRAPHING

Lawson & Jones, Limited, London, Ont.

PULLEYS

*Dodge Mfg. Co., Ltd., Toronto.
*The Goldie & McCulloch Co., Ltd., Galt, Ont.

PULP, bleached sulphite

The Edward Partington Pulp and Paper Co., St. John, N.B.

PULP, sulphate and sulphite

Bathurst Lumber Co., Ltd., Bathurst, N.B.

PUMPS

*Bawden Machine Co., Ltd., Toronto.
*Canadian Fairbanks-Morse Company, Limited, Montreal, Que.
*Darling Bros., Ltd., Montreal.
*Ontario Wind Engine & Pump Co., Ltd., Toronto.
*Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Sprimotor Co., London, Ont.

PUMPS, boiler feed

*Bawden Machine Co., Ltd., Toronto.
*Smart-Turner Machine Co., Ltd., Hamilton, Ont.
*The Goldie & McCulloch Co., Ltd., Galt, Ont.

PUMPS, centrifugal

*M. Beatty & Sons, Ltd., Welland, Ont.
*Smart-Turner Machine Co., Ltd., Hamilton, Ont.
*Waterous Engine Works Co., Ltd., Brantford, Ont.

PUMPS, iron

*Goold-Shapley-Muir Co., Limited, Brantford, Ont.
*Smart-Turner Machine Co., Ltd., Hamilton, Ont.
*Waterous Engine Works Co., Ltd., Brantford, Ont.

PUMPS, turbine and reciprocating

*Bawden Machine Co., Ltd., Toronto.
*Smart-Turner Machine Co., Ltd., Hamilton, Ont.
John McDougall, Caledonian Iron Works Co., Ltd., Montreal, Que.

PUNCHES

*Pratt & Whitney Co., Dundas.

PYROMETERS

*Canadian Hoskins Co., Walkerville, Ont.

RADIATORS

Taylor-Forbes Co., Limited, Guelph, Ont.
Warden King, Ltd., Montreal, Que.

RAILINGS, brass and iron

*Dennis Wire & Iron Works Co., London, Ont.

RAILWAY SIGNAL APPLIANCES

General Railway Signal Co. of Canada, Ltd., Montreal, Que.

RAILWAY SUPPLIES

*Canadian Steel Foundries, Ltd., Montreal, Que.
*Chicago Bridge & Iron Works, Bridgeburg, Ont.
B. J. Coglin Co., Ltd., Montreal, Que.

RAILWAY TARIFF BINDERS

The Esdale Press Ltd., Edmonton.

READY-TO-WEAR GARMENTS, LADIES'

H. C. Boulter Co., Ltd., Toronto.

REAMERS

*Pratt & Whitney Co., Dundas.
*Butterfield & Co., Rock Island, P.Q.

"REDWOOD" lager

E. L. Drewry, Winnipeg, Man.

REED AND RATTAN GOODS

Canada Furniture Mfgs., Limited, Woodstock, Ont.

REFRIGERATORS

Sanderson-Harold Co., Ltd., Paris, Ont.
Lee Mfg. Co., Ltd., Pembroke, Ont.

REFRIGERATING MACHINERY

The Linde Canadian Refrigeration Co., Ltd., Montreal, Que.

REFRIGERATORS, store, homes and institutions

Ham & Nott Co., Ltd., Brantford, Ont.
John Hillock & Co., Ltd., Toronto.

REINFORCEMENT BARS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

REINFORCEMENT FOR CONCRETE

*Canada Wire & Iron Goods Co., Hamilton, Ont.
*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

REVOLVING DOORS

*A. B. Ormsby Co., Ltd., Toronto.

RINGS, gold

Caron Bros., Montreal, Que.

RIVETS

*Canadian Tube & Iron Co., Ltd.,
*The Steel Co. of Canada, Limited, Hamilton, Ont.

RIVETS, bifurcated and tubular

Parmenter & Bulloch Co., Limited, Gananoque, Ont.

RIVETS AND BURS, iron, copper and brass

Parmenter & Bulloch Co., Limited, Gananoque, Ont.

ROLLERS, shade

Daly & Morin, Montreal, Que.

ROOFING, metal

*Metallic Roofing Co., Limited, Toronto.

ROOFING, ready to lay

Standard Paint Co. of Canada, Ltd., Montreal, Que.
*Paterson Mfg. Co., Toronto and Montreal.

ROOF TRUSSES

*The Canadian Bridge Co., Ltd., Walkerville, Ont.
*Dominion Bridge Co., Ltd., Montreal, Que.

ROPE

*Doon Twines Ltd., Doon, Ont.
*Shurly & Derrett, Ltd., Toronto.

ROPE, cotton

Hamilton Cotton Co., Hamilton, Ont.

RUBBER FOOTWEAR

Ames Holden, McCready, Limited, Montreal, Que.
*Gutta Percha & Rubber, Ltd.,
The Miner Rubber Co., Limited, Granby, Que.

RUBBER GOODS

*Canadian Consolidated Rubber Co., Limited, Montreal, Que.
*Gutta Percha & Rubber, Ltd.

RUBBER MOULDS

Bawden Machine Co., Ltd., Toronto.

RUBBER PACKING

*Garlock Packing Company, Hamilton, Ont.

RULES

The Lufkin Rule Co. of Canada, Ltd., Windsor, Ont.

RYE

The St. Hyacinthe Distillery Co., Ltd., St. Hyacinthe, Que.

SADDLERY HARDWARE

*Dominion Forge and Stamping Co., Walkerville, Ont.

SAFES

*Goldie & McCulloch Co., Limited, Galt, Ont.

SAMPLE CASES

The M. Langmuir Mfg. Co. of Toronto, Ltd., Toronto.
J. Eveleigh & Co., Ltd., Montreal, Que.

SANDERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

SANDPAPER

*Delany and Pettit, Ltd., Toronto.

SASH CORD, cotton

Hamilton Cotton Co., Hamilton, Ont.

SALT

Canadian Salt Co., Ltd., Windsor, Ont.
The Dominion Salt Co., Limited, Sarnia, Ont.

SANITARY PAPER TOWELS

*E. B. Eddy Co., Ltd., Hull, Que.

SAW SHARPENING MACHINERY

*Canadian Hart Wheels, Limited, Hamilton, Ont.

SAWS

Henry Disston & Sons, Limited, Toronto.
Shurly & Deitrich, Galt, Ont.

SAWS, crosscut and band

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.
Shurly & Deitrich, Galt, Ont.

SAWS, circular mill

Shurly & Deitrich, Galt, Ont.

SAWS, hack

*Victor Saw Works, Ltd., Hamilton, Ont.

SAWS, of all kinds

Simonds Canada Saw Co., Limited, Montreal, Que.

SAWS, rip

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.
Shurly & Deitrich, Galt, Ont.

SAWMILLS

G. & J. Esplen, Montreal, Que.
*The Waterous Engine Works Co., Ltd., Brantford, Ont.

SAWS, specialties

*Victor Saw Works, Ltd., Hamilton, Ont.

SCALES

The Gurney Scale Co., Hamilton, Ont.

SCALES, counter

The Gurney Scale Co., Hamilton, Ont.

SCALES, railway track, etc.

The Gurney Scale Co., Hamilton, Ont.

SCREENS

*Canada Wire & Iron Goods Co., Hamilton, Ont.

SCREEN DOORS AND WINDOWS

Sanderson-Harold Co., Ltd., Paris, Ont.
Ham & Nott Co., Ltd., Brantford, Ont.

SCREWS

*John Morrow Screw & Nut Co., Ltd., Ingersoll, Ont.
*The National Acme Mfg. Co., Montreal, Que.
*The Steel Co. of Canada, Limited, Hamilton, Ont.

SCREW PLATES

*Butterfield & Co., Rock Island, P.Q.

SECURITIES, engraved

American Bank Note Co., Ottawa, Ont.

SERGES

Rosamond Woollen Co., Almonte, Ont.

SHAFTING

Canada Forge Co., Ltd., Welland, Ont.
*Canadian Drawn Steel Co., Ltd., Hamilton, Ont.
*The Goldie & McCulloch Co., Ltd., Galt, Ont.
*Union Drawn Steel Co., Limited, Hamilton, Ont.
*Dodge Mfg. Co., Ltd., Toronto.

SHANTY BLANKETS

Slingsby Mfg. Co., Ltd., Brantford, Ont.

SHAPEES

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

SHEAR BLADES, iron

The Peter Hay Knife Co., Limited, Galt, Ont.

SHEATHING

*Paterson Mfg. Co., Toronto and Montreal.

SHEATHING, asbestos corrugated

*Eureka Mineral Wool & Asbestos Co., Toronto.

SHEET METAL STAMPINGS

Acme Stamping & Tool Works, Ltd., Hamilton, Ont.

SHINGLES

Bathurst Lumber Co., Ltd., Bathurst, N.B.

SHIRTS

MacKenzie & Co., Ottawa, Ont.
*John W. Peck & Co., Ltd., Montreal, Que.

SHEETS, galvanized

*Dominion Sheet Metal Co., Ltd., Hamilton.

SHIRTS, workmen's

*A. R. Clarke & Co., Ltd., Toronto.

SHOE PEGWOOD

O. Chalifour, Quebec, Que.

SHOE LININGS

Galt Knitting Co., Ltd., Galt, Ont.

SHOES, running and athletic

Ames-Holden-McCready, Ltd., Montreal, Que.

SHOOKS

Barchard & Co., Ltd., Montreal, Que.

SILVER BULLION

Coniagas Reduction Co., Ltd., St. Catharines, Ont.

SILVERSMITH

Canadian Wm. A. Rogers, Ltd., Toronto.
Standard Silver Co., Toronto.

SILVERWARE, sterling

Roden Bros., Limited, Toronto.

SINKS, enamelled

Amherst Foundry Co., Limited, Amherst, N.S.

SKATES, figure

Canada Cycle and Motor Co., Ltd., Toronto.

SKATES, genuine Acme

Canada Cycle and Motor Co., Ltd., Toronto.

SKATES, hockey

Canada Cycle and Motor Co., Ltd., Toronto.

SKATES, ice

Canada Cycle and Motor Co., Ltd., Toronto.

SKIFFS

Peterboro Canoe Co., Ltd., Peterboro, Ont.

SKYLIGHTS

*A. B. Ormsby Co., Ltd., Toronto.
*Metallic Roofing Co., Limited, Toronto.

SLEIGHTS

Tudhope-Anderson Co., Limited, Orillia, Ont.

SLIPPERS

Ames-Holden-McCready, Ltd., Montreal, Que.

SMOKE CONSUMERS

*The Jones Underfeed Stoker Co., Ltd., Toronto.

SOAPS

J. Barsalou & Co., Ltd., Montreal, Que.

SOAP (soft, oil)

The Imperial Varnish & Color Co., Ltd., Toronto.
Sherwin-Williams Co. of Canada, Limited, Montreal, Que.

SODA WATER FOUNTAINS

J. J. McLaughlin, Ltd., Toronto.

SOIL PIPE

Anthes Foundry, Ltd., Toronto.

SOLDER

Alonzo W. Spooner, Ltd., Port Hope, Ont.
*Canada Metal Co., Toronto.
*Tallman Brass & Metal Co., Hamilton, Ont.

SOLDER, silver

Geo. H. Lees & Co., Hamilton.

SOLDER, wire and bar

*American Can Co., Montreal, and Hamilton.

SOLDERING IRONS AND COPPERS

Brown, Boggs Co., Ltd., Hamilton, Ont.

SNOWSHOES

Holt, Renfrew, Ltd., Quebec, Que.

SPARK PLUGS

Canadian Carbon Co., Limited, Toronto.

SPIRAL CONVEYORS

*Canadian Mathews Gravity Carrier Co., Ltd., Toronto.
*The Goldie & McCulloch Co., Ltd., Galt, Ont.

SPLIT PEAS

H. Murton, Guelph, Ont.

SPIKES, railway and marine

Starr Mfg. Co., Ltd., Dartmouth, N.S.

SPIRITS

The St. Hyacinthe Distillery Co., Ltd., St. Hyacinthe, Que.

*Hiram Walker & Sons, Limited, Walkerville, Ont.

SPORTING MEDALS AND TROPHIES

Roden Bros., Limited, Toronto.

SPRAYERS

Spramotor Co., London, Ont.

SPRING COTTERS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

SPRINGS

*Canadian Steel Foundries, Ltd., Montreal, Que.

B. J. Coghlin Co., Ltd., Montreal, Que.

Guelph Spring & Axle Co., Ltd., Guelph, Ont.

SPRINGS, carriage and automobile
Guelph Spring and Axle Co., Ltd., Guelph, Ont.**SPRINKLER SYSTEMS**

*Chicago Bridge & Iron Works, Bridgeburg, Ont.

*General Fire Equipment Co., Ltd., Toronto.

*Purdy, Mansell, Ltd., Toronto.

*Vogel Co. of Canada, Ltd., Montreal, Que.

SPROCKETS, gray iron and flint rim
*Canadian Link Belt Co., Toronto.**STAINS**

R. C. Jamieson & Co., Ltd., Montreal, Que.

STAINS, creosote shingle

A. Muirhead Co., Ltd., Toronto.

STAMPINGS

*Dominion Forge and Stamping Co., Ltd., Walkerville, Ont.

STAMPS, steel, brass and rubber
Pritchard-Andrews Co. of Ottawa, Ltd., Ottawa, Ont.**STAMP MILLS**

*Jenckes Machine Co., Sherbrooke.

STATIONERY, office

Harris Lithographing Co., Toronto.

STEAM PIPE AND BOILER COVERINGS, asbestos

*Eureka Mineral Wool & Asbestos Co., Toronto.

STEAM SHOVELS

*M. Beatty & Sons, Ltd., Welland, Ont.

STEAM SPECIALTIES

*C. A. Dunham Co., Ltd., Toronto.

*Darling Bros., Ltd., Montreal.

*Sheldons, Ltd., Galt.

STEAM TRAPS

*C. A. Dunham Co., Ltd., Toronto.

*Canadian Morehead Manufacturing Co., Limited, Woodstock.

STEEL

*Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N.S.

STEEL BILLETS AND BLOOMS

*The Steel Company of Canada, Limited, Hamilton.

STEEL BUILDINGS

*The Canadian Bridge Co., Ltd., Walkerville, Ont.

*Dominion Bridge Co., Ltd., Montreal.

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

STEEL CASTINGS

*Canadian Steel Foundries, Ltd., Montreal, Que.

*Dominion Steel Foundry Co., Ltd., Hamilton.

*Joliette Steel Co., Ltd., Montreal.

STEEL FILING EQUIPMENT

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

STEEL PEN STOCKS

*Jenckes Machine Co., Sherbrooke.

STEEL RODS

*The Steel Co. of Canada, Ltd., Hamilton.

STEEL SASH

*Dennis Wire & Iron Works Co., London.

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

STEEL SHELVING

*Dennis Wire & Iron Works Co., London.

STEEL WIRE RODS

*The Steel Company of Canada, Limited, Hamilton.

TELEPHONE ACCESSORIES

*Northern Electric Co., Limited, Montreal.

STENCILS, brass

Pritchard-Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

STEREOTYPING

Central Press Agency, Toronto

STOKERS

*The Jones Underfeed Stoker Co., Ltd., Toronto.

STOOLS AND BENCHES, piano and organ

*Otterville Mfg. Co., Ltd., Otterville, Ont.

STONE

The Corinthian Stone Co., Guelph, Ont.

The Hagersville Contracting Co., Hagersville, Ont.

STORE FITTINGS

The Canadian Office & School Furniture Co., Ltd., Preston, Ont.

STOVES

Smith Foundry Co., Ltd., Fredericton, N.B.

Tudhope-Anderson Co., Limited, Orillia, Ont.

Bedford Stove Co., Bedford, Que.

STOVE LININGS

Standard Clay Products, Ltd., St. Johns, Que.

STOVES AND RANGES

Bedford Stove Co., Bedford, Que.

Lee Mfg. Co., Ltd., Pembroke, Ont.

The Jas. Smart Mfg. Co., Ltd., Brockville, Ont.

McClary Mfg. Co., London, Ont.

STRETCHERS, lace curtain

*Otterville Mfg. Co., Ltd., Otterville, Ont.

STRUCTURAL STEEL

*Dominion Bridge Co., Montreal.

*Hamilton Bridge Works Co., Ltd., Hamilton.

*McKinnon Holmes & Co., Sherbrooke, P.Q.

*The Canadian Bridge Co., Ltd., Walkerville, Ont.

*The Structural Steel Co., Ltd., Montreal.

SUIT CASES

J. Eveleigh & Co., Ltd., Montreal.

The M. Langmuir Mfg. Co. of Toronto, Ltd., Toronto.

SURFACERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

SWITCHES, railway

Canadian Ramapo Iron Works, Ltd., Niagara Falls, Ont.

SWITCHES AND FROGS

*Canadian Steel Foundries, Ltd., Montreal, Que.

SWITCH STANDS

Canadian Ramapo Iron Works, Ltd., Niagara Falls, Ont.

TABLE COVERS, chenille

Hamilton Cotton Co., Hamilton, Ont.

TANKS

*Chicago Bridge & Iron Works, Bridgeburg, Ont.

Goold-Shapley-Muir Co., Ltd., Brantford, Ont.

*McKinnon Holmes & Co., Sherbrooke, P.Q.

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

*The Goldie & McCullough Co., Ltd., Galt.

*The Watrous Engine Works Co., Ltd., Brantford.

TANNERS' SUPPLIES

McClary Mfg. Co., London, Ont.

TAPS

*Butterfield & Co., Rock Island, P.Q.

*Pratt & Whitney Co., Dundas.

TAPES, measuring

The Lufkin Rule Co., of Canada, Ltd., Windsor, Ont.

TAPES, paper and cloth, gummed and ungummed
Gummed Papers, Ltd., Brampton,**TELEPHONE ACCESSORIES**

*Canadian Independent Telephone Co., Toronto.

*Northern Electric Co., Limited, Montreal, Que.

TENTS

Mackenzie & Co., Ottawa, Canada.

Turner, J. J., & Sons, Peterboro, Ont.

*Scythes & Co., Ltd., Toronto.

TERRA ALBA

*Albert Mfg. Co., Hillsborough, N.B.

TERRA COTTA (architectural)

Toronto Plate Glass Importing Co., Ltd., Toronto.

TEXTILE SUPPLIES (shuttles, bobbins, spools and picker sticks.)

The Lachute Shuttle Co., Limited, Lachute Mills, P.Q.

THUMB SCREWS

*Canadian Billings & Spencer, Ltd., Welland.

TILING, interlocking rubber

Dunlop Tire & Rubber Goods Co., Ltd., Toronto.

*Gutta Percha & Rubber, Ltd.

TIME RECORDERS

*International Time Recording Co. of Canada, Ltd., Toronto.

TIRES, cycle, auto and truck

Dunlop Tire & Rubber Goods Co., Ltd., Toronto.

*Gutta Percha & Rubber, Ltd.

TRADE MARKS AND DESIGNS

Ridout & Maybee, Toronto.

TRAPS

*C. A. Dunham Co., Ltd., Toronto.

*Canadian Morehead Mfg. Co., Woodstock.

TRANSFORMERS

*The Canadian Crocker-Wheeler Co., Limited, St. Catharines.

TOOLS, track

B. J. Coghlin Co., Ltd., Hamilton, Ont.

TOOLS, sheet metal workers'

Brown, Boggs Co., Ltd., Hamilton, Ont.

TRANSLATIONS INTO FRENCH

Raoul Renault, Quebec City.

TRANSMISSION MACHINERY

*Canadian Link Belt Co., Toronto.

*Dodge Mfg. Co., Ltd., Toronto.

*The Goldie & McCullough Co., Ltd., Galt, Ont.

*The Watrous Engine Works Co., Ltd., Brantford.

TROLLEYS

*Richard-Wilcox Canadian Co., Limited, London, Ont.

*Northern Crane Works, Limited, Walkerville.

TRUCKS

The Gurney Scale Co., Hamilton, Ont.

*Northern Crane Works, Limited, Walkerville.

TRUCKS, brick, tile and lumber

*Watrous Engine Works Co., Ltd., Brantford.

TRUCKS, motor

*National Steel Car Co., Limited, Hamilton.

TRUCKS, warehouse and factory

The W. S. Mahaffy Co., Toronto.

TRUCKS FOR OFFICE AND VAULT USE

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

TRUNKS

Lamontagne Ltd., Montreal, Que.

J. Eveleigh & Co., Ltd., Montreal, Que.

The M. Langmuir Mfg. Co. of Toronto, Ltd., Toronto.

TUBING, brass and copper

*Booth-Coulter Copper & Brass Co., Ltd., Toronto.

Canadian Seamless Wire Co., Toronto.

*Tallman Brass and Metal Co., Hamilton, Ont.

TUBING, gold and silver
Canadian Seamless Wire Co., Toronto.**TUMBLERS, foundry**

*Northern Crane Works, Limited, Walkerville.

*Smart-Turner Machine Co., Ltd., Hamilton, Ont.

TURBINES, steam

*The Canadian Crocker-Wheeler Co., Limited, St. Catharines.

TWEEDS

Rosamond Woollen Co., Almonte, Ont.

TWINES

*Doon Twines Ltd., Doon, Ont.

*Shurly & Derrett, Ltd., Toronto.

TWINES, binder

Brantford Cordage Co., Ltd., Brantford, Ont.

TWINES, cotton

Hamilton Cotton Co., Hamilton, Ont.

TWIST DRILLS

*John Morrow Screw and Nut Co., Ltd., Ingersoll.

*Pratt and Whitney Co., of Canada, Dundas, Ont.

*The Wilt Twist Drill Co., Ltd., Walkerville, Ont.

UNDERWEAR

Galt Knitting Co., Ltd., Galt, Ont.

UNDERWEAR, imperial

Kingston Hosiery Co., Ltd., Kingston, Ont.

UNIONS

*Dart Union Co., Ltd., Toronto, Ont.

*Otterville Mfg. Co., Ltd., Otterville, Ont.

UPHOLSTERED FURNITURE, leather and tapestries

Imperial Rattan Co., Ltd.

VALVES

*Kerr Engine Co., Ltd., Walkerville.

VALVES, for steam and water

Jenkins Bros., Ltd., Montreal, Que.

VALVES, regrounding globe, angle, cross checks, swing checks, etc

Penberthy Injector Co., Ltd., Windsor, Ont.

VARNISHES

*Ault & Wiborg Co. of Canada, Ltd., Toronto.

Berry Bros., Walkerville, Ont.

R. C. Jamieson & Co., Ltd., Montreal, Que.

VAULT FITTINGS, steel

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

VAULTS AND VAULT DOORS

*The Goldie & McCullough Co., Ltd., Galt.

VENTILATING APPLIANCES

*Sheldons, Ltd., Galt.

VENTILATING SYSTEMS

Gurney Foundry Co., Ltd., Toronto.

VENTILATORS

*A. B. Ormsby, Ltd., Toronto.

*The Metallic Roofing Co. of Canada, Ltd., Toronto, Ont.

VINEGAR

The St. Hyacinthe Distillery Co., Ltd., St. Hyacinthe, Que.

WAGONS

Tudhope-Anderson Co., Ltd., Orillia, Ont.

WALL COPING

Standard Clay Products, Ltd., St. Johns, Que.

WASHERS

*The Steel Company of Canada, Limited, Hamilton.

WASHERS, plate or wrought

London Rolling Mill Co., Ltd., London, Ont.

WASTES, wool and cotton

Factory Waste and Metal Co., Montreal, Que.

*Scythes & Co., Ltd., Toronto.

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Benjamin Moore & Co., Ltd., Toronto.

*Paterson Manufacturing Company, Toronto and Montreal.

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

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WEBBING, non-elastic Hamilton Cotton Co., Hamilton, Ont.	WHISKY *Hiram Walker & Sons, Ltd., Walkerville, Ont.	WIRED GLASS *Metallic Roofing Co., Ltd., Toronto.	WOOD PRINTERS Barchard & Co., Ltd., Toronto.
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WHEELS *Canadian Car & Foundry Co., Ltd., Montreal, Que.	WHITE LEAD Brandram-Henderson, Ltd., Montreal, Que.	WIRE, insulated electric *Northern Electric Co., Limited, Montreal.	WOOD SPLIT PULLEYS *Dodge Mfg. Co., Ltd., Toronto.
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WHEELS, emery *Canadian Hart Wheels, Ltd., Hamilton, Ont.	WINDOW SHADES Daly & Morin, Montreal, Que.	WIRE, weatherproof *Northern Electric Co., Limited, Montreal.	WORSTED COATINGS AND SUITINGS Rosamond Woollen Co., Almonte, Ont.
WHEELS, propeller, iron and steel *Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.	WIRE *The Steel Company of Canada, Limited, Hamilton.	WIRE, weatherproof *Northern Electric Co., Limited, Montreal.	WRAPPERS, book, bottle, etc. *The Thompson & Norris Co., of Canada, Ltd., Niagara Falls, Ont.
WHEELS, turbine, water *Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.	WIRE CLOTH *Canada Wire & Iron Goods Co., Hamilton.	WIRE WORK C. H. Johnson & Sons, Ltd., Montreal, Que.	WROUGHT IRON PIPE *The Steel Company of Canada, Ltd., Hamilton.
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			ZINC, electrical *The Canada Metal Co., Toronto.

*For Display Advertisement see Index, Page 983

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We are well equipped at present to handle one or two new accounts.

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General Advertising Agents

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WINNIPEG
Codes—ABC, 5th Edition

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THE LARGEST COMMERCIAL DROP FORGE PLANT IN CANADA

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for all pipe connections in the plant,
will return you a handsome profit, just
because there is no loss, no leak and
no up-keep cost where they are used

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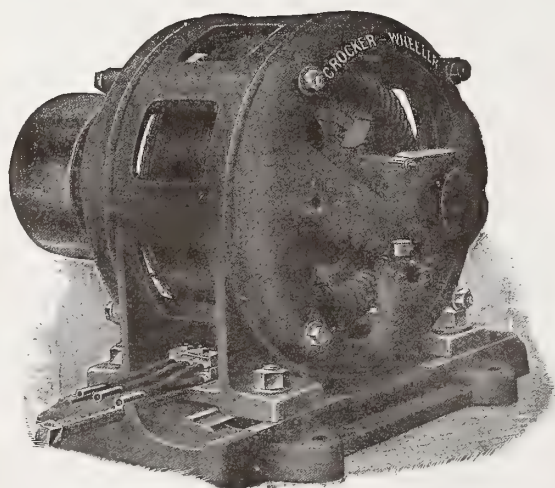
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A SOLUTION that has been proved through numerous actual tests, and always
found to give the desired result, is the applica-
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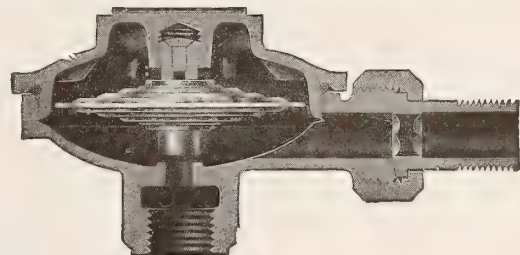
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You will find Dunham Radiator Traps, when applied to your heating system, to be
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ON hard, tough shell steel, solid taps are too expensive as the excessive wear quickly puts them below gauge size.

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We can supply them for all tapping operations on Shrapnel and H.E. shells to 4.5" diameter.

Ask for our list and prices of Shell Tools
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for the manufacture of— — —

This Equipment is
all New, Modern
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EARLY DELIVERY

6", 8"
and
9.2
HIGH
EXPLOSIVE
SHELLS

**THE JOHN BERTRAM & SONS CO.
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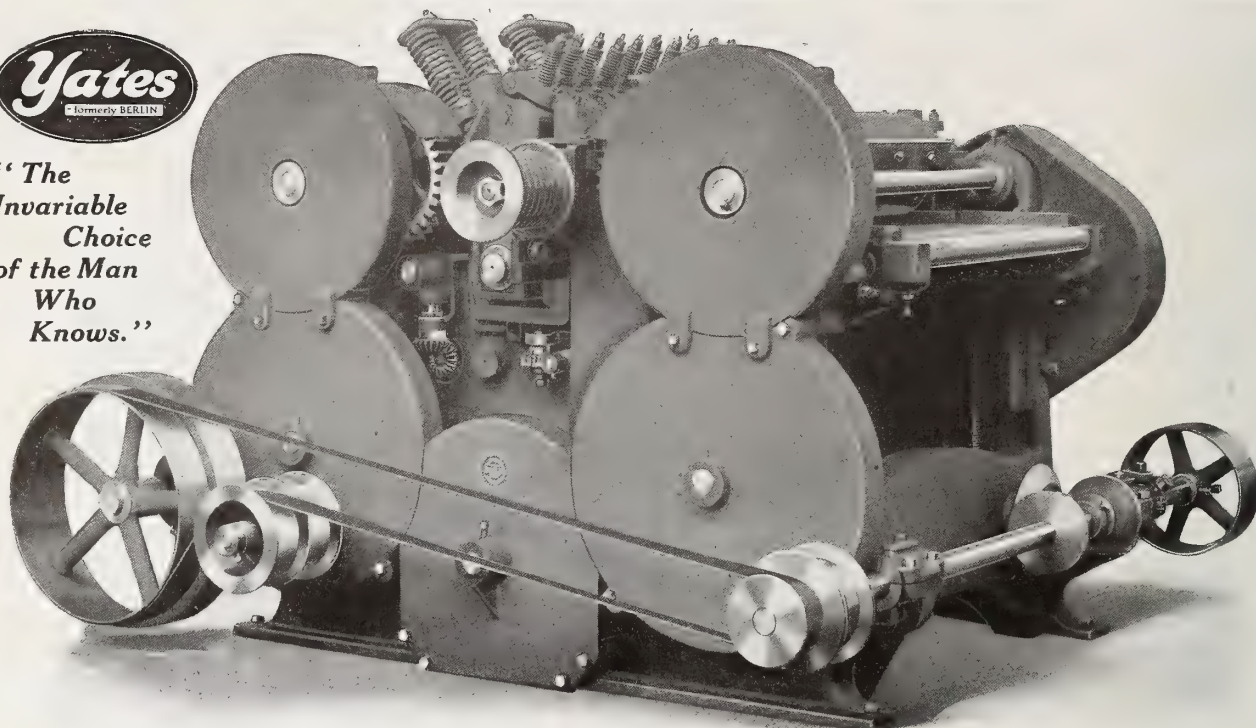
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**"The
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of the Man
Who
Knows."**

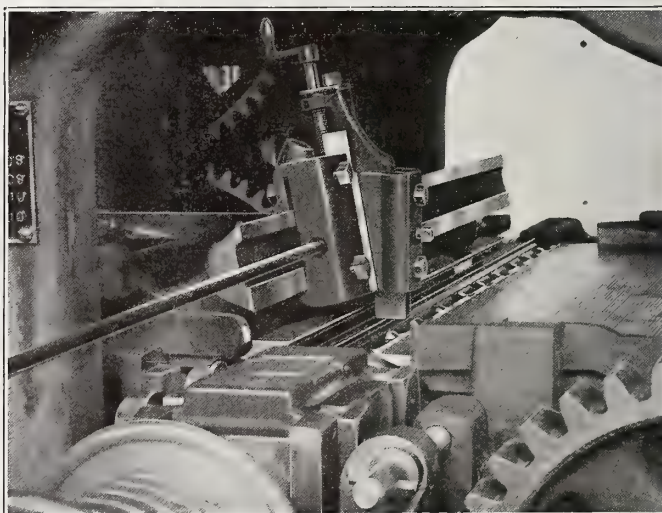


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grow the Spruce and Pine Trees from which we manufacture our

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We get after the logs and run them through our modern mills equipped with the last word in wood-working machinery.

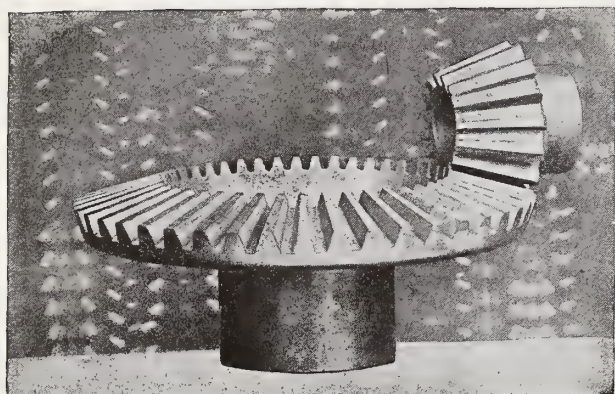
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for All Purposes*

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SOAP STOCK

BENZINE



WHITE LEAD
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PAINT

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OIL
VARNISHES

BLACK
JAPANS
STEEL BRIDGE
PAINTS

ROOFING
PAINTS

CUP GREASE
LINSEED OIL
SOAP

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Limited

HAS REQUESTED ITS GENERAL MANAGER

MR. R. J. YOUNGE

TO PROCEED AT ONCE TO

SOUTH AFRICA

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He will leave just as soon as he can gather together the necessary information from those firms who are interested—probably next month.

South Africa offers splendid opportunities for almost every line of manufactured goods produced in Canada, and NOW is the time to establish permanent connections.

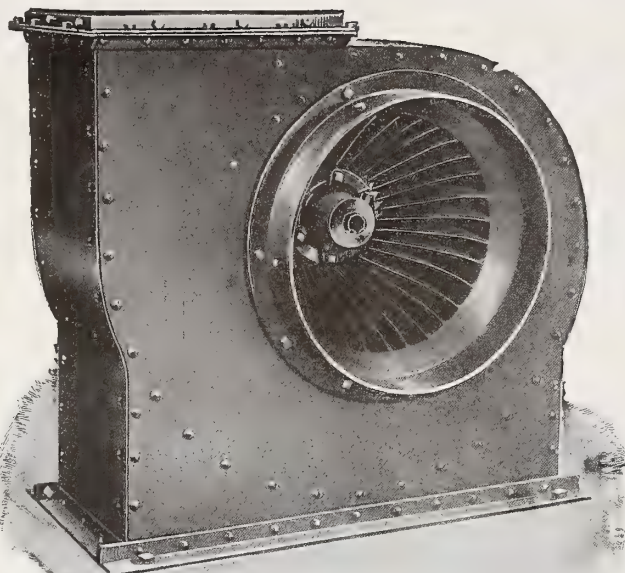
During the year just closed the *Export Association of Canada* has placed with Canadian Manufacturers more than 800 orders. The Association ships and finances all orders, so that the manufacturer is not required to take any risks regarding credit.

Canadian Manufacturers who are interested in Mr. Younge's mission should communicate *at once* with

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263 ST. JAMES ST., MONTREAL



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For Heating and Ventilating

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\$ 25.00	FOR	\$21.50
50.00	"	43.00
100.00	"	86.00

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¶ To Architects, Engineers and Owners contemplating such construction we offer our services.

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**The Most
Up-to-Date
Forge Plant
on the
American
Continent**

**—
Daylighted
with
Trus-Con
Steel
Sash**

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Associated with the Metal Shingle and Siding Co., Limited

PRESTON

MONTREAL

WINNIPEG

SASKATOON

CALGARY



Building 500' x 60'

Construction completed in 15 weeks.

Reinforced Concrete Factory Building WHICH WE HAVE RECENTLY COMPLETED

We are familiar with all up-to-date methods of construction and would be glad to give accurate estimates of cost and such other information as you may desire, promptly on request.

Work done in all parts of Ontario

WELLS AND GRAY, Limited
ENGINEERS AND CONTRACTORS

Branch Office :
Bank of Commerce Bldg.,
WINDSOR, ONT.

247 Confederation Life Bldg.,
TORONTO

Show This Advertisement to Your Power Man—

A SUPERINTENDENT WRITES:

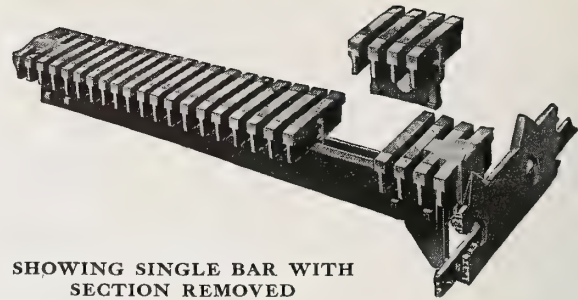
Oshawa, Ont., March 30th, 1916.

Galt Foundry Co.,
Galt, Ont.
Gentlemen :—

Some months ago we ordered one set of McNaughton Rocking Grates for our No. 1 Boiler. We have been using this continually ever since, and they gave us such good satisfaction, that we followed up the order with two more sets for our No. 2 and No. 3 boilers. We may also add that these are giving entire satisfaction and showing a clean fire at all times.

Yours truly,
(Signature).....

Name of above company on request



SHOWING SINGLE BAR WITH
SECTION REMOVED

A GRATE BAR

that gives universal satisfaction. It is in use in more than one hundred of the biggest plants in Canada.

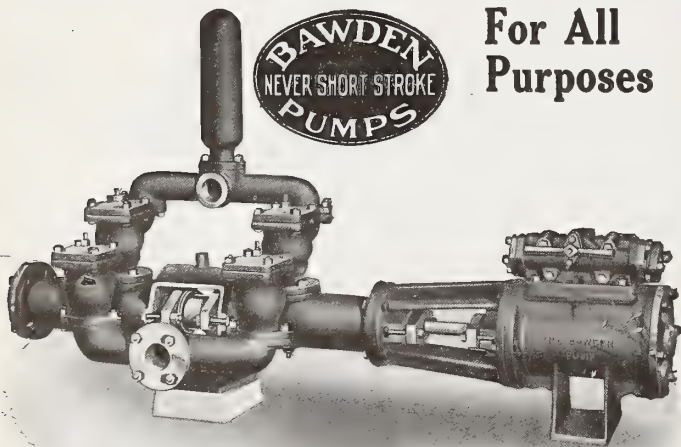
The McNaughton Rocking Sectional Grate Bar

has high efficiency, long life and low repair costs.

Write for Descriptive Leaflet

GALT FOUNDRY COMPANY - Galt, Ontario

BAWDEN PUMPS



**For All
Purposes**

The pumps backed by a grand reputation
and the finest installation in Canada.

Bawden Basket Strainers and Pipe Flanges

THE BAWDEN MACHINE CO., Ltd.

133 Sterling Road, Toronto, Canada

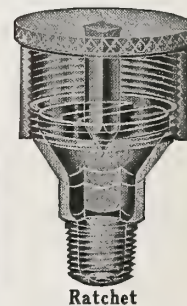
PRESSED STEEL AND BRASS GREASE CUPS OIL HOLE COVERS, OIL CUPS

**DOWEL
PINS**



Plain

Write for Prices
and Catalogues

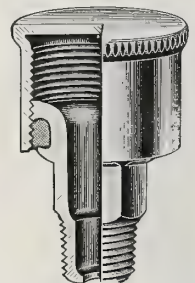


Ratchet



Style "D"

**SMALL
STAMPINGS**



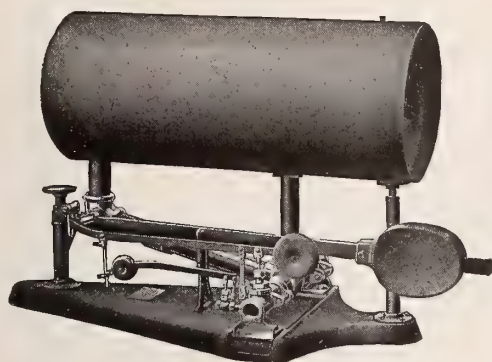
Leather Packed

Samples Sent
on Application

THE CANADIAN WINKLEY CO.

LIMITED

WINDSOR, ONTARIO



**More
Steam for
Less Coal**

**Every Institution using
steam for Heating, Cooking
or Drying needs the**

Morehead

SYSTEM

WHETHER your proposition is large or small, the Morehead System will save you coal, keep the Heating, Cooking or Drying apparatus drained of all water, work steam heated machinery at full capacity and feed your boilers distilled water at a high temperature. The Morehead System will take every ounce of accumulated condensation from the steam system and *return it direct to the boiler* while hot — automatically—wastelessly—90% cheaper and 100° to 150° hotter than a pump can do it.

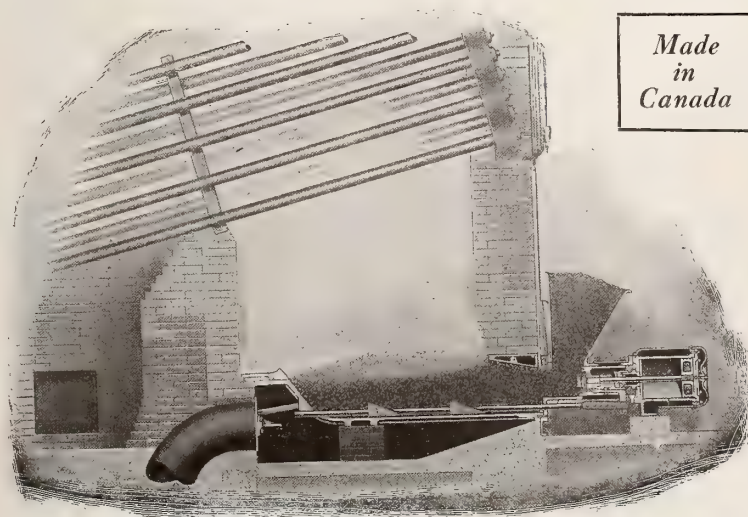
Write for "Back-to-Boiler" Literature

If you are having trouble with heating or want to install a better method of handling condensation, tell us of your troubles, and we will give you the best expert advice without its costing one cent. Don't delay this chance to save. Write us to-day.

Canadian Morehead Manufacturing Company

DEPT. "K" - WOODSTOCK, ONT.

Saves Coal—Assures Good Fires! Jones Underfeed Stoker



*Made
in
Canada*

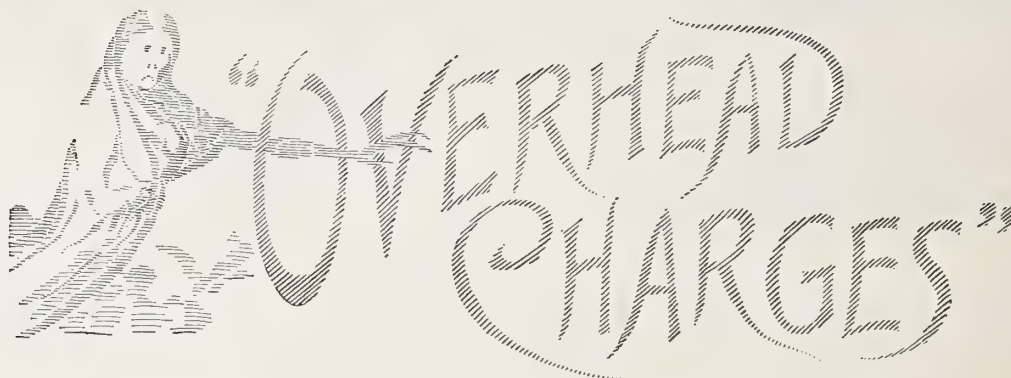
There's nothing experimental about the Jones. It is, above all things, **practical**. It is actually a **necessity** wherever there exists a need for fuel economy in boiler firing. And that's in practically every steam power house in the land.

**The Jones Saves From
15% to 25% on Fuel Costs**

This is no mere assertion, but a proved fact. It's an everyday experience wherever Jones Stokers are installed. It will do for you what it does for others. Let us prove it. Begin by writing us for full particulars. We can satisfy your curiosity and turn your skepticism into a conviction that the Jones Stoker will earn dividends.

Jones Underfeed Stoker Company, Limited
 NATIONAL TRUST BUILDING, TORONTO

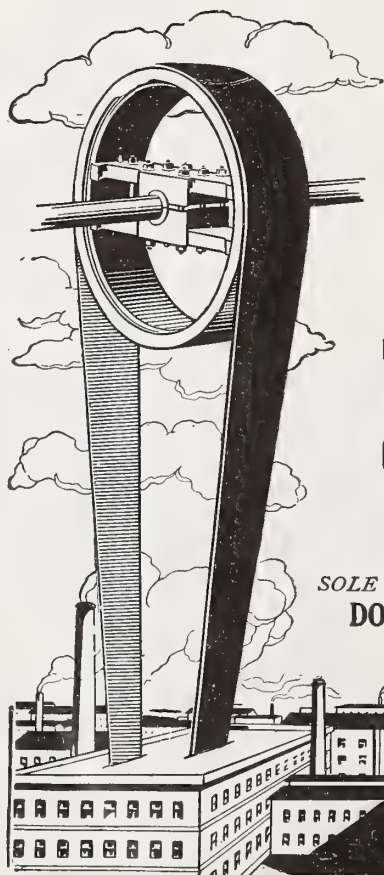
That grim spectre—



RELENTLESS and ever present in Factory operation is the spectre of Overhead Charges.

Its ravages among the profits of your business must be constantly checked. One of its most active lieutenants is *Power Wastage*—caused by belt slippage over metal pulleys. Many thousands of dollars are wasted yearly in Canadian Factories and workshops where Wood Pulleys would save 50% of the waste.

Actual scientific tests show that on the average you can buy *four* Dodge Wood Split Pulleys with the money you now lose by waste from one Metal Pulley. Therefore we appeal to Presidents of Companies, Managers and Superintendents of Factories, Engineers and others, to personally supervise the buying of their pulleys and specify always—



DODGE

WOOD SPLIT PULLEYS

SOLE MAKERS:

DODGE MANUFACTURING CO. Limited, TORONTO



SECURITY FOR BUSINESS RECORDS

Filed in An Office Specialty Record Safe

This safe is designed for giving greater protection to valuable business records that require something more than the unprotected filing cabinet to depend upon for safety through all danger. It is fitted with any combination of Office Specialty Filing Sections that are required for keeping your business records.

This Safe is not ponderously heavy, as most Safes usually are, neither is it a light "shell" cabinet often referred to as a Safe. Stability, which is a necessity in a cabinet of this nature, is found in every particular in the Office Specialty Record Safe. Let us show you one fitted with Sections to suit your particular business.

MADE IN CANADA

by

THE OFFICE SPECIALTY MFG. CO. LIMITED

HOME OFFICE AND FACTORIES, NEWMARKET, ONT.

Filing Equipment Stores:

Toronto, Montreal, Ottawa, Halifax, Winnipeg, Regina, Edmonton, Vancouver

OFFICE
SPECIALTY MFG.
CO., Limited
NEWMARKET, ONT.

Without charge or obligation please send me information about items checked below: Record Safe, Efficiency Desks, Chairs, Wood Filing Cabinets, Steel Filing Cabinets, Office Vault Trucks, Card Ledger Desks.

Name

Business

Address

BANK OF MONTREAL

ESTABLISHED 100 YEARS (1817-1917)

Capital Paid Up	-	-	\$ 16,000,000
Rest	-	-	- 16,000,000
Undivided Profits	-	-	1,414,423
Total Assets	-	-	365,215,541

BOARD OF DIRECTORS:

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C. B. Gordon, Vice-President

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E. B. Greenshields, Esq.	H. R. Drummond, Esq.
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Head Office: MONTREAL

Gen. Manager, Sir Frederick Williams-Taylor, LL.D.
Assistant Gen. Manager, A. D. Braithwaite

**Travellers' Cheques, Limited Cheques and
Travellers' Letters of Credit issued, negotiable
in all parts of the world.**

Branches at all important points in Canada, and at

NEW YORK	LONDON, ENGLAND	CHICAGO
64 Wall St.	47 Threadneedle St.	108 South La Salle St.

THE CANADIAN BANK OF COMMERCE

SIR EDMUND WALKER, C.V.O., LL.D., D.C.L., President

JOHN AIRD
General Manager

H. V. F. JONES
Ass't General Manager

CAPITAL PAID-UP, \$15,000,000
RESERVE FUND, \$13,500,000

Extension of Canadian Trade

The Bank will make enquiries into the possibilities and requirements of markets abroad for exporters or importers who desire to extend their trade with British colonies or possessions. Owing to the large number of its correspondents and agents it has unusual facilities for this work.

S 57

THE ROYAL BANK OF CANADA

Incorporated 1869

Capital Authorized	.....\$25,000,000
Capital Paid Up	.....\$12,900,000
Reserve & Undivided Profits	..\$14,300,000
Total Assets\$270,000,000

HEAD OFFICE, MONTREAL

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	C. S. Wilcox
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	C. E. Neill
	M. B. Davis
	G. H. Duggan
	C. C. Blackadar

OFFICERS

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C. E. Neill, General Manager
F. J. Sherman, Asst. Gen. Manager
W. B. Torrance, Superintendent of Branches

Branches in every Province of the Dominion of Canada and in Newfoundland; in Havana and throughout Cuba, Porto Rico, Dominican Republic, Costa Rica and Venezuela; Antigua, St. John's; Bahamas, Nassau; Barbados, Bridgetown; Dominica, Roseau; Grenada, St. George's; Jamaica, Kingston; St. Kitts, Basseterre; Trinidad, Port of Spain, San Fernando; British Guiana, Georgetown, New Amsterdam; British Honduras, Belize.

LONDON, ENG., OFFICE—Princes St., E.C.

NEW YORK AGENCY—Corner William and Cedar Sts.

Savings Department at All Branches

ESTABLISHED 1875

IMPERIAL BANK OF CANADA

CAPITAL PAID UP \$7,000,000 RESERVE FUND \$7,000,000

PELEG HOWLAND, President

E. HAY, General Manager

HEAD OFFICE . . TORONTO EXPORTERS

THIS bank offers particularly good facilities in the handling of the banking requirements of exporters. Its strong, foreign connections guarantee the most efficient service.

AGENTS IN GREAT BRITAIN

ENGLAND—Lloyd's Bank Limited, London, and Branches

SCOTLAND—The Commercial Bank of Scotland, Edinburgh, and Branches

IRELAND—The Bank of Ireland, Dublin, and Branches

AGENTS IN FRANCE

Lloyd's Bank (France), Limited

AGENTS IN UNITED STATES

NEW YORK—The Bank of The Manhattan Company

CHICAGO—First National Bank BUFFALO—Bank of Buffalo

DETROIT—Old Detroit National Bank

SAN FRANCISCO—Wells Fargo Nevada National Bank
and in all other principal centres

UNION BANK OF CANADA

Established 1865

Head Office, Winnipeg

Paid-up Capital.....\$5,000,000 Reserve Fund.....\$3,400,000
Total Assets over.....\$109,000,000

Facilities for Home and Foreign Trade

With over 315 Branches in Canada, from Halifax to Prince Rupert, the Union Bank of Canada offers excellent facilities for the transaction of every phase of modern banking business.

In connection with export trade, attention is particularly drawn to the advantages offered by the Foreign Exchange Department of our London (England) Office, and Manufacturers and Exporters are invited to avail themselves of the Commercial Information Bureau established at that Branch.

THE BANK OF BRITISH NORTH AMERICA

Established in 1836
Incorporated by Royal Charter in 1840

Paid-up Capital.....\$4,866,666.66
Reserve Fund.....\$3,017,333.33

Head Office—5 GRACECHURCH STREET, LONDON

HEAD OFFICE IN CANADA—
St. James Street, MONTREAL

H. B. MACKENZIE, General Manager

Advisory Committee in Montreal

SIR HERBERT B. AMES, M.P.

W. R. MILLER, Esq.

W. R. MACINNES, Esq.

This Bank has Branches in all the principal Cities of Canada, including Dawson, (Y.T.), and Agencies at New York and San Francisco in the United States. Agents and Correspondents in every part of the world.

Agents for the
Colonial Bank, West Indies

Drafts, Money Orders, Circular Letters of Credit and
Travellers' Cheques issued negotiable
in all parts of the world.

Savings Department at All Branches

The Merchants Bank of Canada

Head Office - MONTREAL

Capital Paid-up - - - \$7,000,000
Reserve Fund and Undivided Profits 7,250,984

BOARD OF DIRECTORS

SIR H. MONTAGU ALLAN, C.V.O., President

K. W. BLACKWELL, Vice-President

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ANDREW A. ALLAN	F. ROBERTSON	THOS. AHEARN
C. C. BALLANTYNE	G. L. CAINS	

E. F. HEBDEN, Managing Director

D. C. MACAROW, General Manager

T. E. MERRETT, Superintendent of Branches and Chief Inspector

A GENERAL BANKING BUSINESS TRANSACTIONED

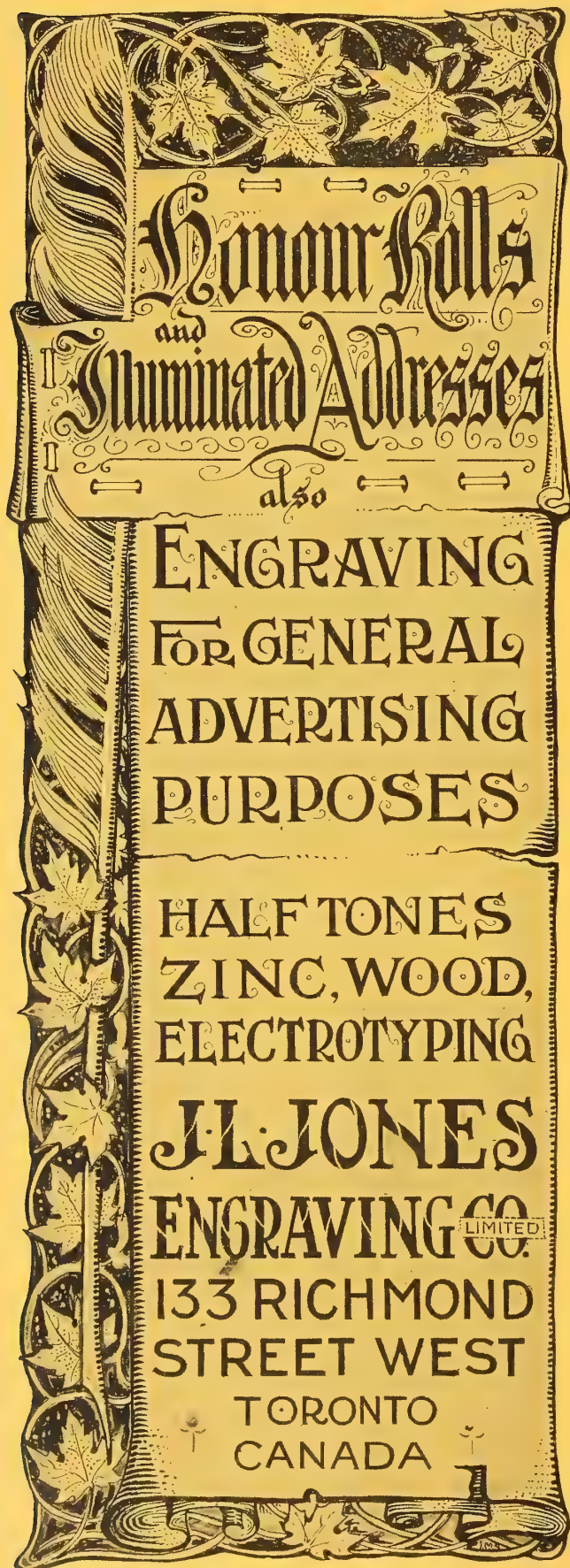
220 BRANCHES AND AGENCIES IN CANADA

Extending from the Atlantic to the Pacific

SAVINGS DEPARTMENT AT ALL BRANCHES

Deposits received and Interest
allowed at best current rates

New York Agency: 63 and 65 WALL ST.



Honour Rolls
and
Illuminated Addresses
also

**ENGRAVING
FOR GENERAL
ADVERTISING
PURPOSES**

**HALF TONES
ZINC, WOOD,
ELECTROTYPING**

**J. L. JONES
ENGRAVING CO. LIMITED**

**133 RICHMOND
STREET WEST
TORONTO
CANADA**

Made in Canada

Canadian Manufacturers using the
best kind of Stationery specify

Rolland's Papers

Ask your Printer to show you our
selection of Bond, Writing and
Ledger Papers. There is a line for
every use, each one being the best
in its class.

WE RECOMMEND

Superfine Linen Record

for your correspondence stationery.

SAMPLES ON REQUEST

The Rolland Paper Co., Limited

HIGH-GRADE PAPER MAKERS

General Offices :
142 St. Paul St. West
Montreal, P.Q.

Mills at
St. Jerome and
Mont Rolland, P.Q.

Riordon Pulp & Paper Company, Limited

Montreal

SULPHITE FIBRE WOOD PULP
FOR PAPER MILLS

CAPACITY 60,000 TONS PER YEAR

HAWKESBURY "IMPERVIOUS
SPRUCE" SHEATHING in 36 and
72 INCH ROLLS

SPRUCE LUMBER, CLAPBOARDS
CEDAR SHINGLES, RAILWAY
TIES, FENCE POSTS

Pulp Mills: Hawkesbury and Merritton

Saw Mills:

Calumet, L'Annonciation, Boule, Quennouille, P.Q.

WE DO NOT MAKE PAPER

THE POPULAR PAPER

Bell-Fast Bond & Bell-Fast Ledger Paper

Has Gained This Prestige By Comparison

ASK YOUR PRINTER TO GIVE YOU SAMPLES AND PRICES OF BELL-FAST BOND & BELL-FAST LEDGER PAPER FOR 1917 STATIONERY SUPPLIES AND COMPARE WITH OTHER PAPERS

THIS WATERMARK



GUARANTEES QUALITY

We have an exceptional booklet proving the popularity of Bell-Fast Bond and Bell-Fast Ledger Paper, a copy of which we will gladly send you on request.

Howard Smith Paper Mills, Limited, Montreal

COAL FAMINE

You owe it to the Empire that you use as little coal as possible by getting the utmost out of your Steam Plant. This can be secured by the use of our Boiler Preservatives PROTECTO for interior and PROTECTOCOAT for exterior use. A satisfied customer writes about the former:

"Referring to conversation with you this morning, we are pleased to state that we have used your PROTECTO BOILER PRESERVATIVE for many months, and find it is all you claim it to be, and we intend to continue using it."

And another about PROTECTOCOAT "that he saved 1½ % of fuel during summer months in addition to all brickwork setting repairs being cut out for four years." (Names on application.)

It will pay you also to get particulars of our full line of VULCANIZED FIBRE. Stocks carried Montreal and Toronto.

MILL SUPPLY DEPT.

Beveridge Paper Co. Limited
MONTREAL

BROWN BROS., LIMITED



Manufacturers of

ACCOUNT BOOKS

Loose Leaf Ledgers, Binders, etc.
Leather Goods, Diaries, Paper,
Stationery, Office Supplies

OFFICE AND FACTORY : : TORONTO
SIMCOE, PEARL AND ADELAIDE STS.

H. & D. Corrugated and Solid Fibre Board



CONTAINERS will save on your transportation charges, save your floor space, cut down packing expenses, and give you positive protection against loss from damage and pilfering. Write for prices and samples.

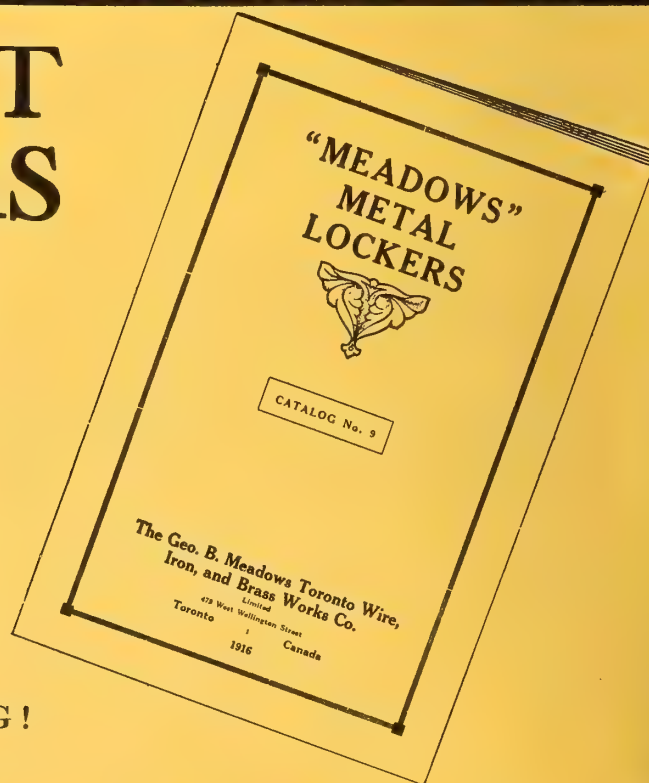
The Hinde & Dauch Paper Co. of Canada, Limited, Toronto, Canada

THE LATEST ON LOCKERS



This book contains a lot of valuable information on this important subject.

IT IS YOURS FOR THE ASKING!

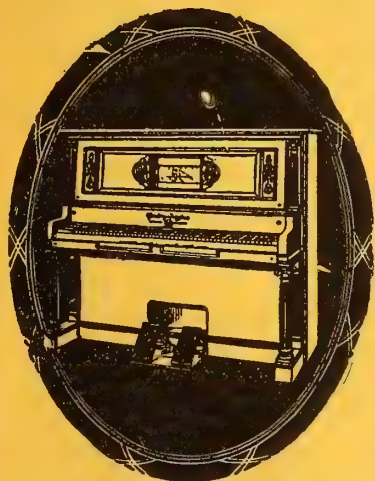


The Geo. B. Meadows, Toronto Wire, Iron & Brass Works Co., Limited
479 WEST WELLINGTON ST. - TORONTO, CANADA

Men forget business cares in the enjoyment of

Gourlay-Angelus

Player-Pianos



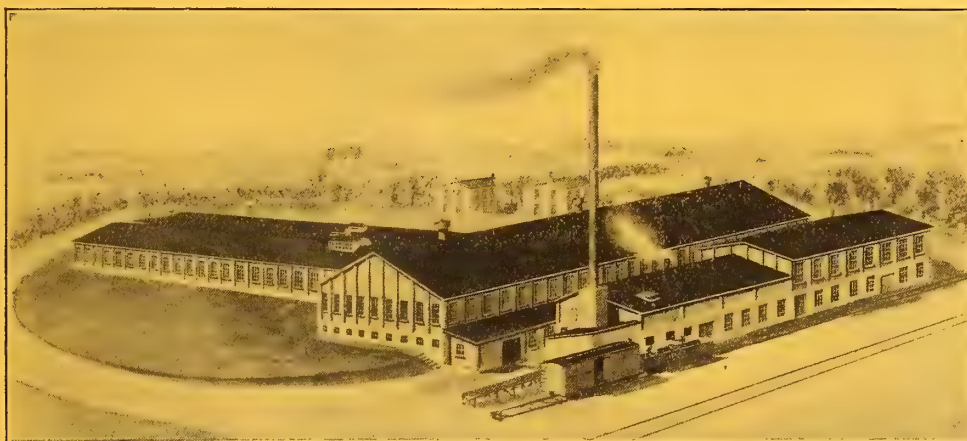
A GOURLAY-ANGELUS provides ANYONE with the ability to play ANY music artistically.

In the opportunity for recreation thus afforded, many busy men find enjoyment hitherto undreamed of, as well as a complete rest from the business worries and cares of the day. If you find it hard to leave these cares behind you when you go home, depend upon it, a Gourlay-Angelus will make you forget them.

One Toronto manufacturer tells of this pleasure in a Gourlay-Angelus as follows:—"I have always been glad I purchased the Gourlay-Angelus. The longer I have it the more I enjoy it and the more I use it."

Write for Catalogue and Prices

GOURLAY, WINTER & LEEMING,
188 Yonge St., Toronto



Coating Mill, Barber Division, Georgetown, Ont.

The Largest and Best Equipped Mill in Canada for
the Coating of Paper.

"Maple Leaf" "Beaver" "C.A." Coated

Insist on these Brands being used in your Catalogue

PROVINCIAL PAPER MILLS CO., Limited

Toronto Office: Telephone Building.

Private Exchange Adelaide 1986

**Strong
and
Secure**

FOR



**Mailing
Tubes**



ADDRESS :

Rudd Paper Box Company, Limited
372-376 Richmond St. West
Toronto, Canada

Why Pay Freight on Wooden Boxes?



MARTIN
Corrugated Shipping Cases

Are made from special fibre stock, and are constructed so as to protect the goods from damage or breakage. At the same time saves 75 p.c. of weight of wooden cases.

These boxes comply with the freight classification and are accepted at the same rate as goods packed in wooden boxes. Can be used for shipping by freight or express any goods in reasonable weight package.

Write for catalogue and sample. Give inside dimensions and weight of contents.

Martin Corrugated Paper & Box Co., Ltd.
Office and Factory *353 Pape Avenue, Toronto*



THE
NATIONAL ACME
COMPANY

Makers of Screws, Nuts,
Studs and Hexagon
Brass Nuts in Standard
threads and sizes. Also
Special Screw Machine
Work from Iron, Steel
and Brass Bars up to $2\frac{1}{4}$ "
diameter and $10\frac{1}{2}$ " long at

MONTREAL, P.Q.
De Courcelles & G.T.R., St. Henri



POWER-SPEED-SERVICE WITH DUNLOP "GIBRALTAR" BELTING

YOU CANNOT BEAT "GIBRALTAR"

Now, more than ever, because of the great scarcity of leather, rubber belting is coming to its own.

For this reason—and also because "Gibraltar" will give you a hundred times more satisfaction than either Leather or Balata—we urge you to procure a sample of "Gibraltar Redspecial" from one of our branches.

They are located in Victoria, Vancouver, Edmonton, Calgary, Saskatoon, Regina, Winnipeg, London, Hamilton, Toronto, Ottawa, Montreal, St. John, Halifax.

When you procure the sample, cut it open, try to pull the plies apart, and note the weight of duck, strength of friction. Then compare "Gibraltar Redspecial" with any other make of belting.

"Gibraltar" is constructed of the very best duck. The rubber friction is of the highest quality and has adhesive powers second to none. Separation of plies and stretching are unknown in "Gibraltar" Belting. These are some of the reasons why the sales of "Gibraltar" have reached their present great proportions.

For Drives, Rotaries, Edgers, Lath and Shingle Machines, or any kind of Transmission work, there is nothing better than Dunlop "Gibraltar Redspecial" Belting.

Why not get on the right "Belt Line?"

**Dunlop Tire & Rubber
Goods Co., Limited**

D. 25





CARBIDE

There are reasons why Canadian Carbide is in demand.

First—The quality and price are right.

Second—The Company backs every Package.

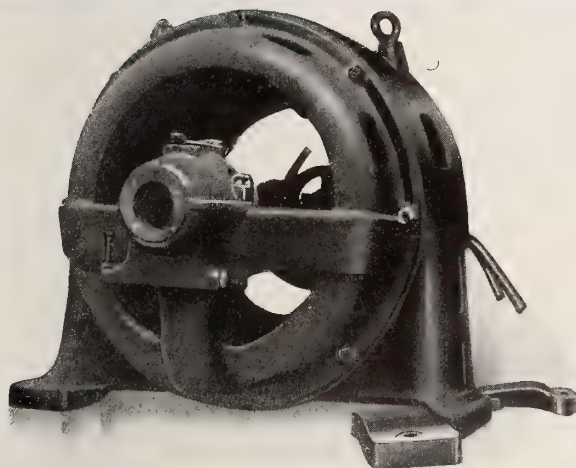
Third—The organization gives you prompt attention.

ORDER DIRECT

Canada Carbide Company, Limited
MONTREAL - CANADA

Works:
Merritton, Ontario
Shawinigan Falls
Quebec

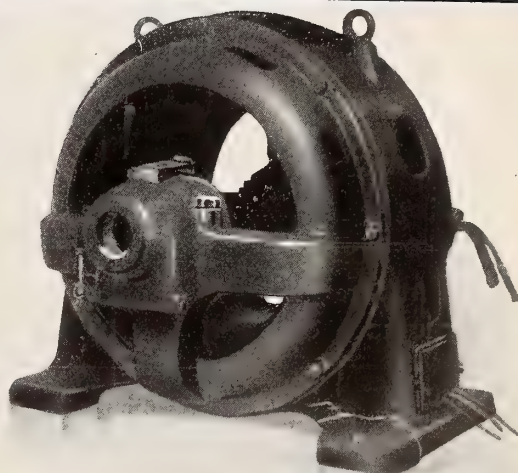
Ask for the **GREEN Drum**



Broken leg of an electric motor.

WHEN TIME IS WORTH MORE THAN MONEY,

and breakage such as the illustration, etc., occurs, remember that the OXY-ACETYLENE Process can make it as good as new. It took but a couple of hours to put this motor in operation again and the cost of repairs was only a few dollars.



The same, after being welded

Welding saves thousands of machines from the junk pile daily, and you certainly can find valuable applications of the process in your works.

Why Not Investigate Into This Process To-day?

We are the pioneers of the Process, and we only supply apparatus which have withstood the test of years of practice.

Our first desire, is our customers satisfied, profits come after.

L'AIR LIQUIDE SOCIETY Oxygen, Welding and Cutting Plants

Paris, France, Toronto, Montreal, Winnipeg and all over the world.

L'AIR LIQUIDE SOCIETY, Montreal, Que.
(I.C.)
Gentlemen—Please send without obligation to me your new booklet.
Name.....
Address.....
Prov.....
Bus's.....

Tool Room Partitions



Machinery Guards
Window Guards
and
Wire Work of
every description

—
WIRE ROPE
ROPE FITTINGS
—

Manufactured by

THE B. GREENING WIRE CO., LIMITED
HAMILTON, ONT. MONTREAL, QUE.

CHEMICALS

ACIDS

All Strengths

SULPHURIC	} Commercial and Chemically Pure
MURIATIC	
NITRIC	
MIXED	
ACETIC	

GLAUBER SALT
AQUA AMMONIA
Commercial or C. P.
ANHYDROUS AMMONIA
SALT CAKE
SOLDERING FLUX
TINNING FLUX
ZINC CHLORIDE
AMMONIA CHLORIDE
(Sal Ammoniac)

SILICATE OF SODA
BICARBONATE OF SODA
CAUSTIC SODA
HYPO SULPHITE OF SODA
SULPHIDE OF SODA
(all forms)
BI-SULPHITE OF SODA
etc., etc., etc.

Grasselli Lime Sulphur Solution and Lead Arsenate
FOR TREE SPRAYING

The Grasselli Chemical Co.

HEAD SALES OFFICE : TORONTO, ONTARIO

Limited

Branch Sales Office, Montreal, Que.

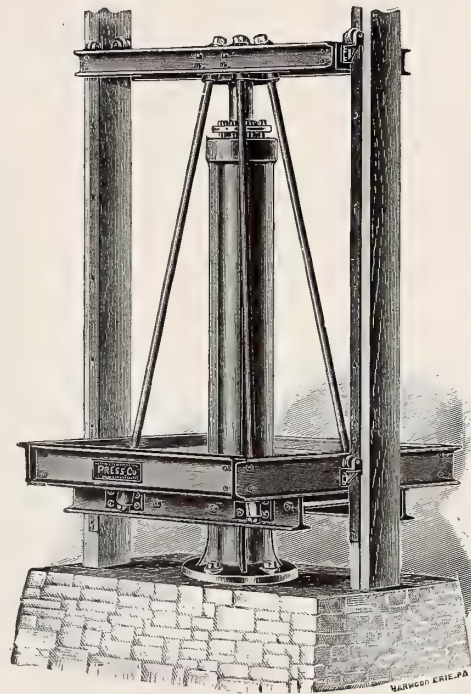
Works : Hamilton, Ont.

HYDRAULIC PUMPS and ACCUMULATORS

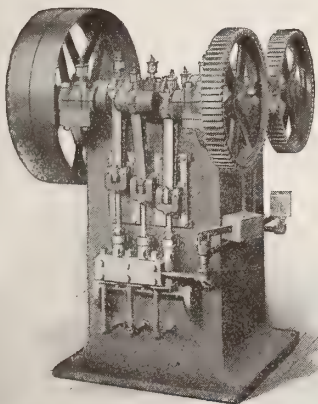
All Sizes and Styles

Accumulators
up to 18" x 15'

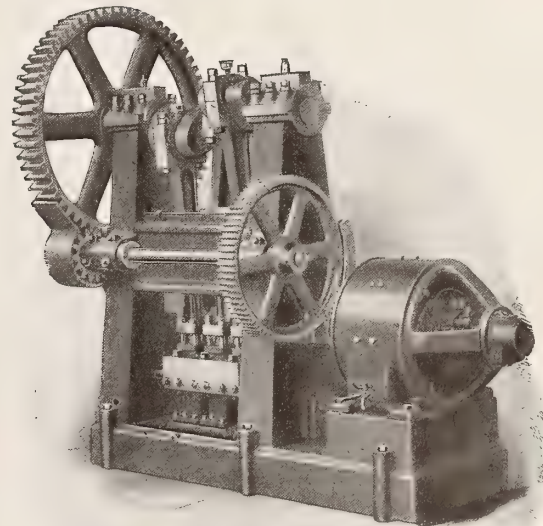
All
pressures



Pumps up to
100-gallon
capacity



Any
pressure
desired



Canadian Boomer & Boschert Press Co., Limited
18 Tansley St. Cable Address : Pressco MONTREAL

"Every Casting Clean and Uniform"

This is the reason our customers are sending us repeat orders on high-grade

GREY IRON CASTINGS

CORED OR SOLID

**PLATING AND
FINISHING OF
CAST IRON FIX-
TURE PARTS
AND ELECTRO
GALVANIZING**

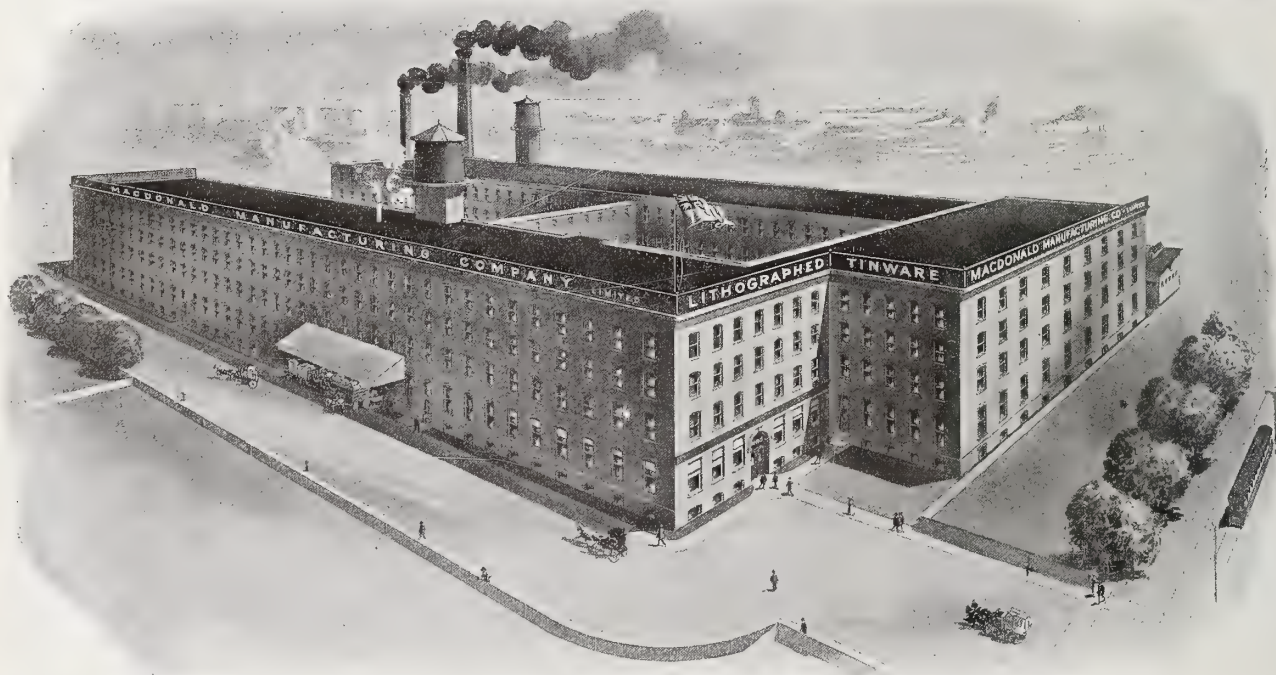
We use no scrap when melting our iron, and we are more than commonly careful to see that everything conduces to flawless material and workmanship. A trial order from you will demonstrate the superiority of our service.

YOUR ENQUIRY IS SOLICITED
WRITE OUR SALES OFFICE

Electrical Fittings & Foundry, Limited

Sales Office: 331 King St. W., Toronto, Canada

Works: PRESTON, CANADA



MACDONALD MANUFACTURING CO., LIMITED, TORONTO

We Specialize on Cans or Boxes required for Customer's Exclusive use
Practically Nothing Else made in our Entire Plant
This Ensures Undivided Attention to Your Particular Order

PLAIN OR DECORATED TIN BOXES AND SIGNS

Lymburner Limited

MANUFACTURERS

METAL SPECIALTIES

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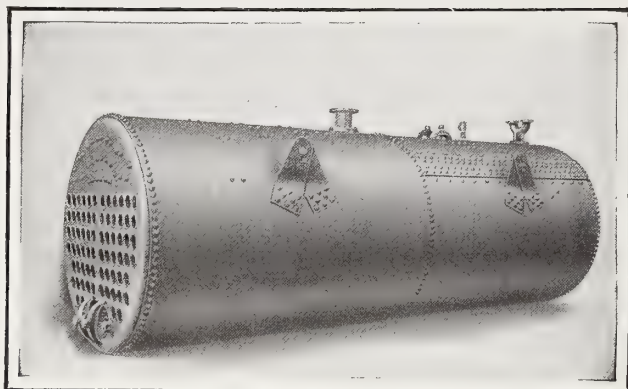
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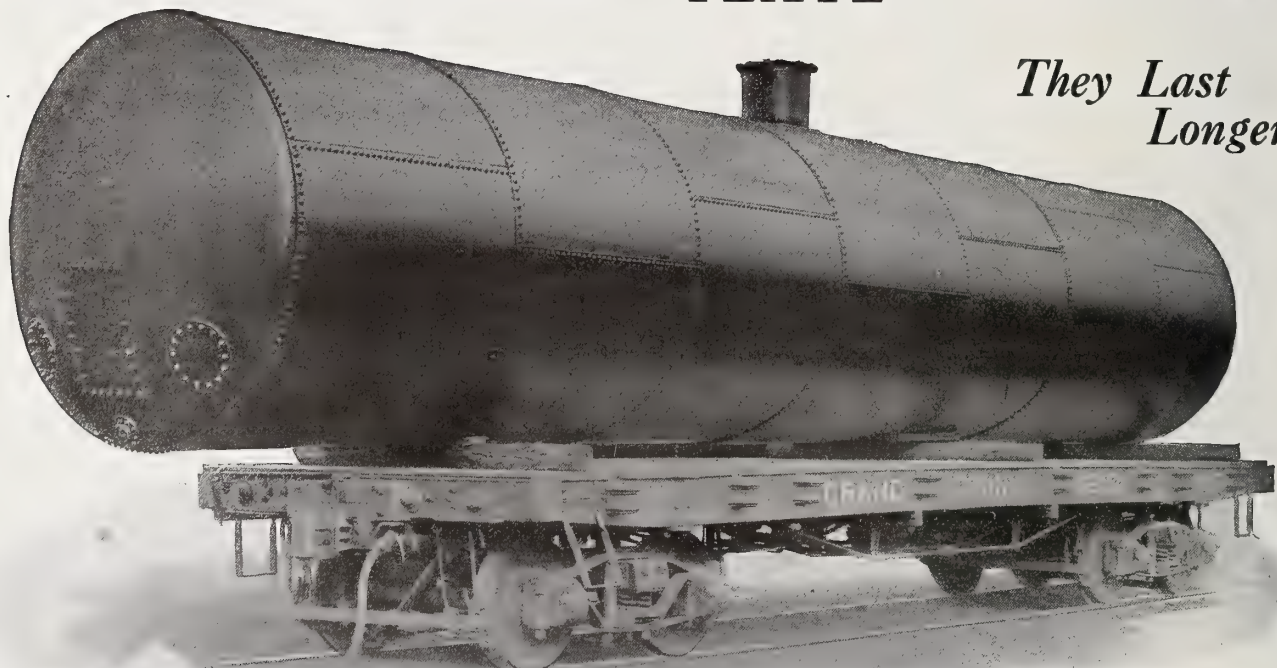
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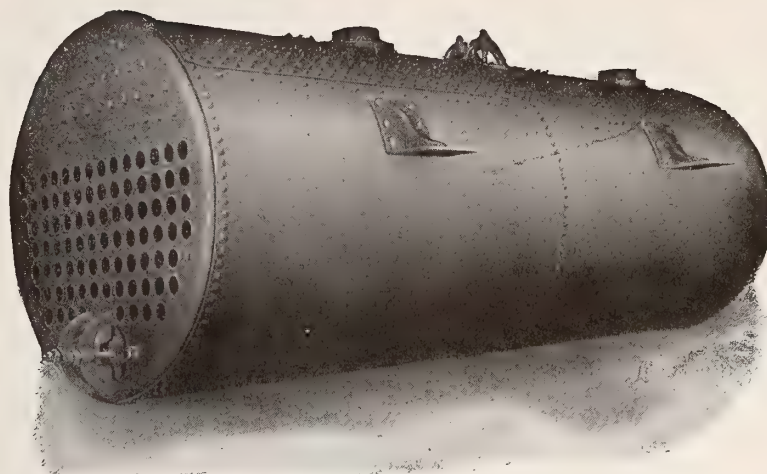


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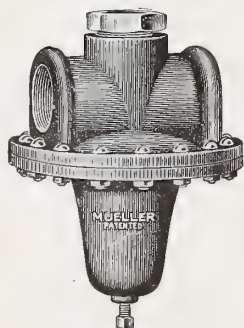
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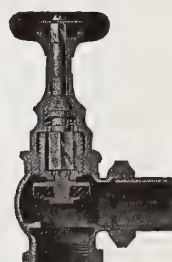
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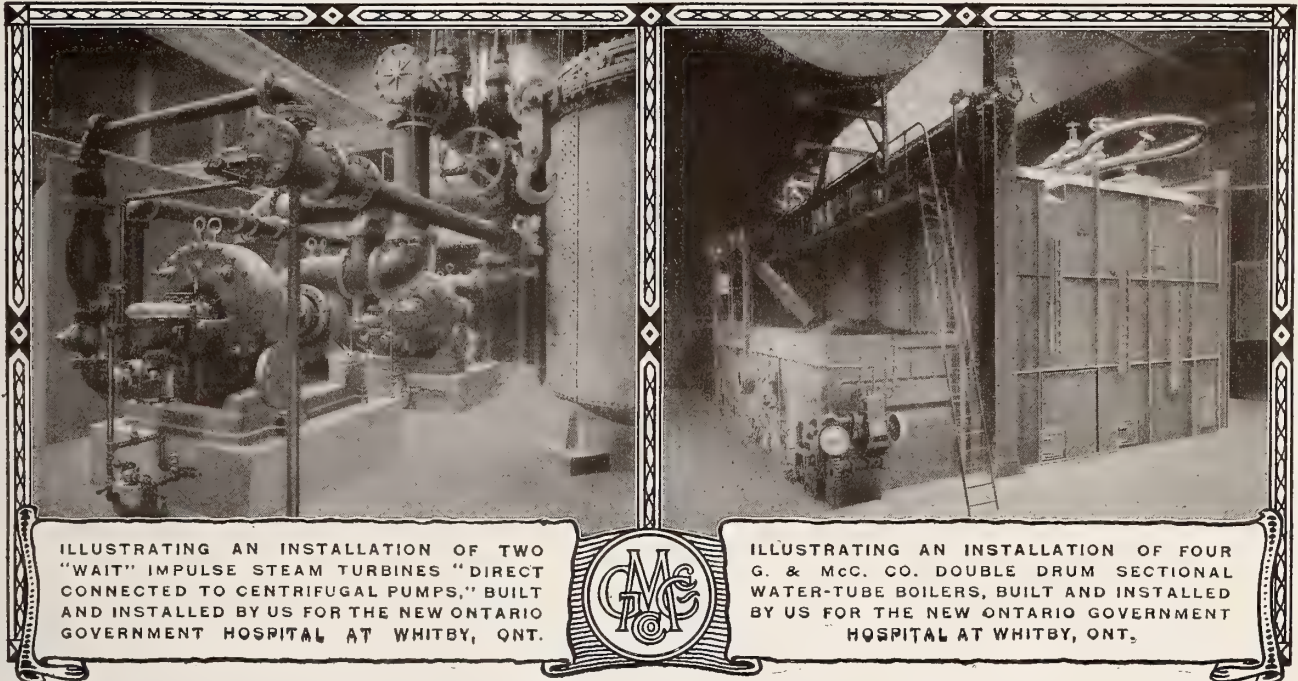
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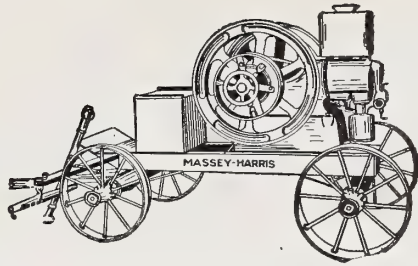
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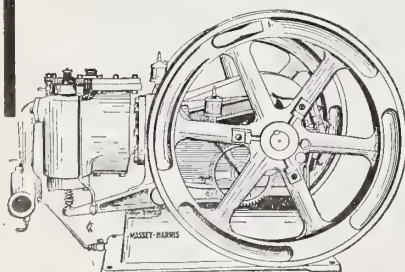
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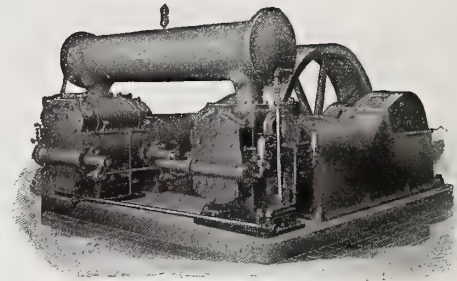
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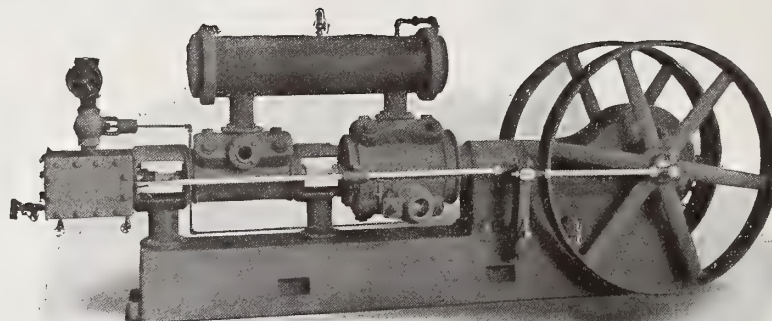
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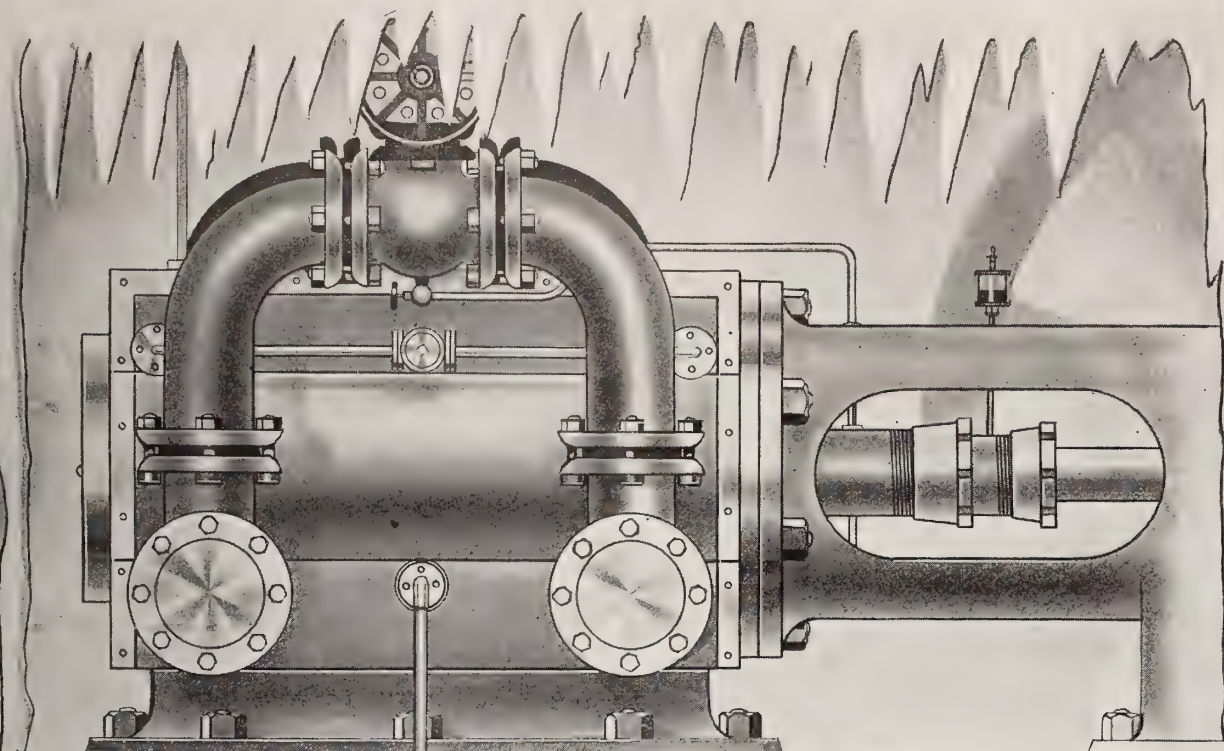
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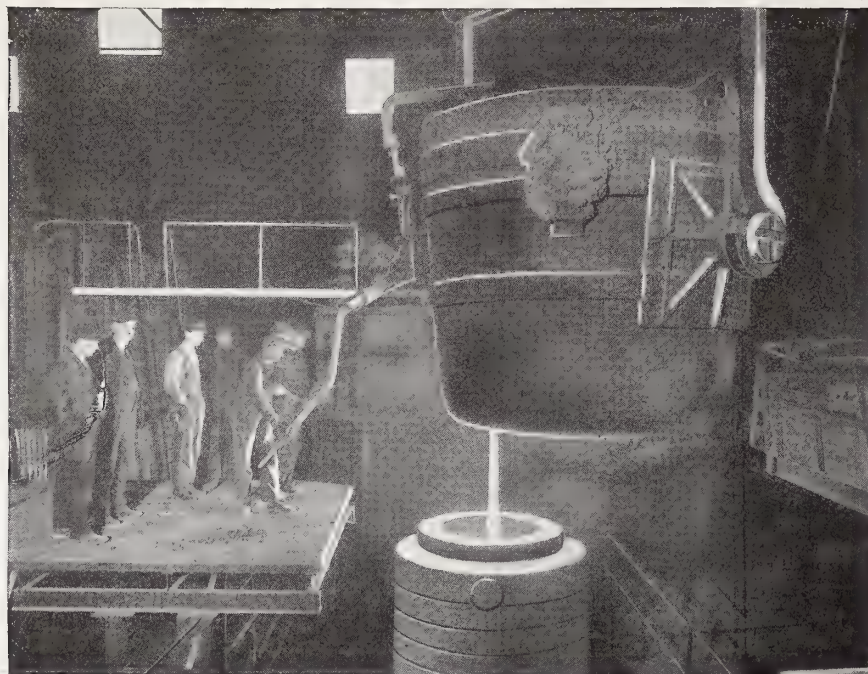
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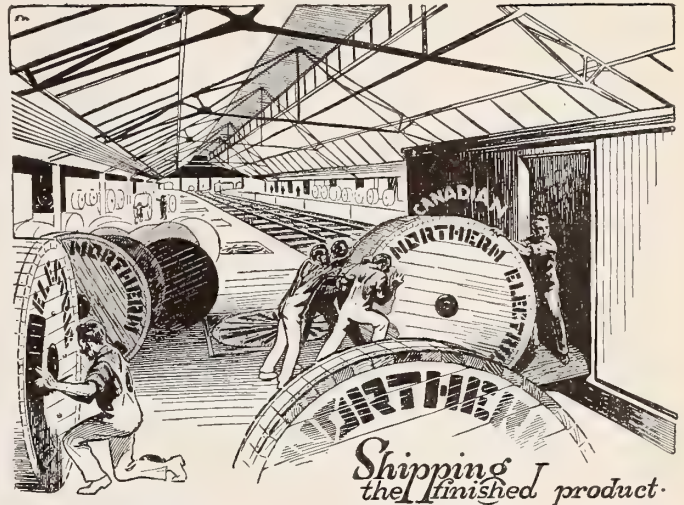
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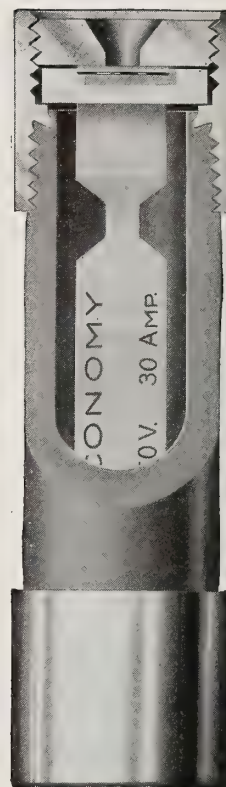
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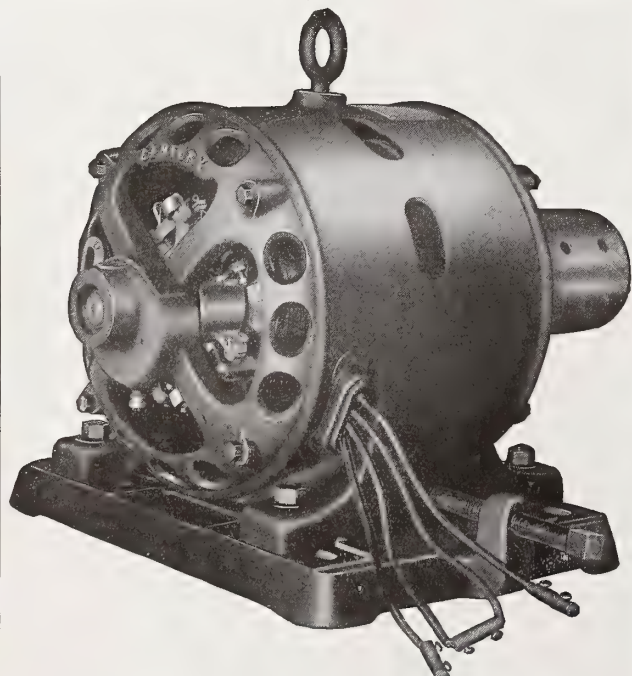


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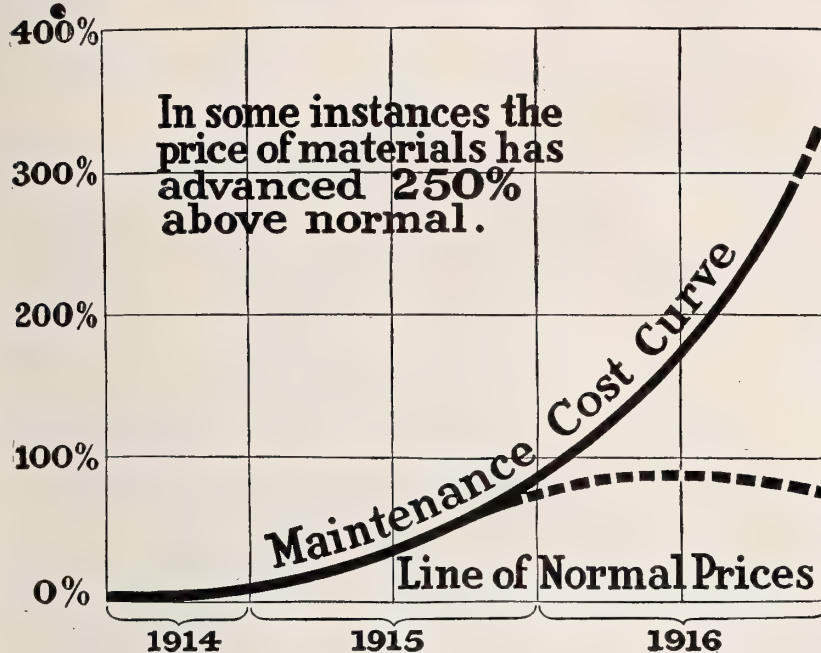
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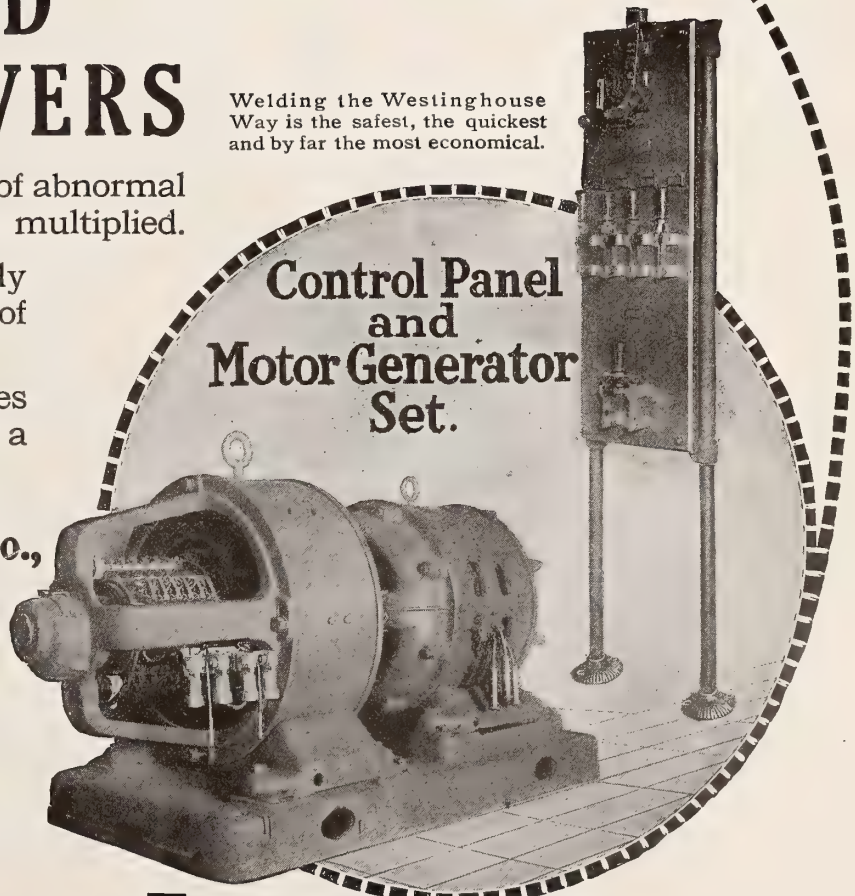
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Third, Under the guaranty plan the roof must be constructed under our supervision and receive our O. K. both as to materials and workmanship.

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Interest on Judgments.

IT has been held in a recent decision in the Manitoba Courts that the rate of interest which may be collected on judgments in open accounts is 4 per cent., based apparently on an English statute of 1838. Dominion legislation (Chapter 120 of the Revised Statutes, 1906) provides that in the Provinces of British Columbia, Saskatchewan and Alberta, the North-West Territories and the Yukon Territories, judgment debts shall bear interest at the rate of 5 per cent. No express provision appears to have been enacted in regard to the rate of interest on judgments in the other provinces.

It is apparent that uniformity of legislation is essential in a matter of the kind. The rules of Court in Manitoba had fixed 6 per cent. as the rate of interest previous to the judgment we have mentioned, thereby indicating that it was a fair rate for that province.

Business houses in the Western Provinces note with increasing frequency a tendency on the part of some debtors to take advantage of the 4 per cent. rate and allow judgments to run indefinitely. These debtors say frankly that as long as they are carrying a charge of only 4 per cent. on the judgments they desire to use the money rather than raise the amount necessary to discharge them. This

is a matter which the Law Department of the Dominion Government should take into serious consideration with a view to the necessary legislation to bring to an end what is regarded as an anomalous and unfair system.

The Railway Situation.

IT would be difficult to estimate the enormous loss suffered by the public during the past year and a half because of the inability of our railways to handle the traffic offered them for carriage. There has hardly been a day during that time that there has not been an embargo of some kind in effect. During last summer, when operating conditions were favorable, embargoes were being put on and taken off alternately on both carload and less than carload traffic by the two principal Canadian railways. Toronto suffered particularly in regard to less than carload traffic. The reason for these particular embargoes was the inability of the railways to secure labor. Appeals were made to the Board of Railway Commissioners, and no doubt investigations followed, but the result of the latter has not been given to the public. In other words, the public has not been informed as to the cause of the trouble—whether it was due to a scarcity of labor or to the fact that the railways were not prepared to pay the current wage.

The public generally, recognizing that these are times in which we should all pull together, refrained from making many serious objections, and hoped that something would be done to meet the situation. During the past two months conditions have been growing from bad to worse. The railways say they cannot keep their locomotives up to standard on account of the scarcity of mechanics, or that they cannot get crews to man their trains, because of the higher wages paid in munition plants. If that is correct, it seems to us that at a time like this they should, either voluntarily or be compelled to, adopt the same means of securing labor as the manufacturers have been obliged to follow. As an illustration, plants that were paying mechanics from 27½ to 30 cents per hour are now paying from 55 to 60 cents per hour, and a bonus of 5 per cent. if they remain for six months, payable every six months. What manufacturers are doing the railways can do. By paying what are now the prevailing rates of wages they can get men to repair their locomotives. This will relieve

the situation and at the same time materially increase their revenues.

The railway officials have been putting forth their best efforts to serve the public with the machinery available. It would seem, however, that the fact has been overlooked that there has been an increased demand for raw materials due to new industries of different kinds, many of which are, or will be, making munitions, and at the same time there is not sufficient motive power to handle the traffic which would move under normal conditions.

Railway companies, under the Railway Act, are required, without delay and with due care and diligence, to receive, carry and deliver all traffic offered for carriage, and must furnish and use all proper appliances and means necessary therefor. The Board of Railway Commissioners has power to require them to keep their equipment up to some standard of efficiency. It is the general belief that the largest percentage of our present difficulties would disappear if all locomotive power available could be utilized. The time has come for the Board of Railway Commissioners to act.

The Empire—One.

THE Imperial National Ministry has done a really great thing in inviting the Dominion premiers with representatives of India, to a special War Conference of the Empire to be held in March. There is nothing in the record of free states to compare with the strange anomaly which has existed in the King's Dominions since the struggle began. The greater constituent states of our Imperial system have been engaged in a common business, the most momentous that ever concerned them all, yet they have had no common means of management.

Our overseas dominions, with virile insight and splendid patriotism, realized the nature of the issue from the first and rose to it. They have contributed in every respect to the efforts and sacrifices of the war, yet they have had no share in its direction, no voice in the policy adopted, no control over its execution. They have been thanked for their vigorous assistance to the old firm where they ought to have been taken into partnership that the work might be carried on in a new spirit and on broader lines. Representatives of political departments almost purely insular in scope were concerned with the driving of the world-war, while representatives of the new nations and of the Eastern Empire under our flag were not.

This was a state of things which no man could defend on its merits, and that it could indefinitely continue with practical advantage or moral safety to Imperial relations was impossible. The Dominions have not gone into this conflict merely to help the Mother Country, as is sometimes suggested. They went in like each of the allies, to help themselves as well. They are in the struggle, not only because it is Britain's war, but also because they know it to be their war. Their peoples would have been kindled to still more fervent effort had that moral been applied long

ago by giving the self-governing states and India their proper portion of control and responsibility. What was so conspicuously amiss is now at last to be remedied.

Each Dominion premier is to be, during his stay, a full member of the War Cabinet at "special and continuous meetings," to deal with the prosecution of the war and the possible conditions of peace. All this means something far higher in status and authority than the so-called Imperial Conferences of the past. These were a sort of temporary appendages to the Colonial office. They could debate and advise, but their constant feeling was that they could never bring sufficient leverage to bear on business which vitally concerned them. The Dominion representatives wished to be in closer touch on these occasions with the Prime Minister and the Imperial Government as a whole.

In 1911 the momentous episode was not the Conference proper, but the famous meetings at the Committee of Imperial Defence when Viscount Grey's confidential statement on foreign policy was a revelation. This is the precedent now extended to full partnership in these special sessions of the War Cabinet itself. We cannot doubt that this event will leave its mark on history. The first real Executive Council of Empire cannot be the last. It cannot fail to have permanent results. Posterity may yet say that a new and memorable work of creative statesmanship came into being almost unaware.

The Problem of Industrial Research.

THE recent trenchant address by Professor J. C. McLennan of Toronto University, before the Royal Canadian Institute and Toronto Branch of the Canadian Manufacturers' Association, on the problem of Industrial Research in Canada, clearly shows that much requires to be done to make the Dominion more self-contained.

Now, however, that Canada proposes to enter seriously upon research work in order to stimulate her industries and to bring others into existence, care must be taken that the work of organization is efficient, and that advantage will be taken of the successful experiments already carried out in Britain and France.

The war is a struggle in which science is one of the combatants. The most direct way of bringing about the desired union of science and industry is to furnish a great number of men imbued with the right spirit who may staff our industries—especially in the capacity of trained researchers.

The question of how industrial research can best be conducted is one of primary importance. Is it better to have all research organized and installed in a national institution, or is it better to let it grow wherever it will? There are some classes of physical enquiry that, like rare plants, will only grow on a particular soil. Under the inspiration of a particular individual or nurtured by the traditions of a particular place, they flourish and give to the world wonderful fruit. Any attempt to transplant

them might end in the loss of the strain forever. Such researches should be nurtured by the state with suitable funds and facilities, but no interference should be made with this mode of growth.

There are, on the other hand, many problems the solutions of which have for long been wanted, and which are most likely to be solved, if at all, by being attacked on a large scale by many workers with almost unlimited funds behind them. There are the questions of the more economical consumption of coal, the more universal distribution of electrical energy, and numerous large chemical and electro-chemical problems that can be carried out with greater expedition under State aid than by individual enterprise. For these matters one wants National Physical Laboratories controlled by a Commission on Industrial and Scientific Research, such as is understood to be the scheme of the Minister of Trade and Commerce. The Right Honorable Sir George E. Foster and the state should provide funds on a copious scale. In fact, we know that it will be done. Just as in the United States millions are expended on scientific investigation, so in this country the money will be found. The returns from this expenditure will depend upon the spirit of the workers.

The Manufacturers' Part.

A GREAT deal of industrial research will have to be carried out in our factories. Some of it is inseparable from the manufacture of articles in large quantities. Experiments are made and the effect watched on the finished article. Then, again, some experiments involve the use of heavy machinery, such as is only available in large commercial installations, but generally the realm of experimental work is becoming recognized and the accession of more trained men will give greater facilities.

A closer intimacy is growing up between our manufacturers and the universities that will bring advantages to both. The manufacturer can supply real, living problems and the machinery necessary for their investigation, while the college will supply the men and instruments not ordinarily found in works. This brings the student in contact with the works during his university course and gives him an opportunity of exercising his ingenuity and resource.

In addition to co-operation between the manufacturer and the university, we must also have co-operation between the manufacturers themselves in the matter of researches in which the whole industry has a common interest. Manufacturers must be prepared to pool their special knowledge in certain branches and assist in forwarding new roads into the unknown territory, for the problems arising in some industries are too numerous and too difficult to be dealt with by individual firms. If we do not combine we may be beaten by powerful foreign combinations. There will still be left plenty of work for the individual firm to tackle by their own experts.

How the State May Assist.

SMALL manufacturing firms are sometimes handicapped in not being able to pay men with special qualifications. One of the ways in which the state could assist would be in providing the service of highly-trained men to help smaller firms to overcome occasional difficulties. Many matters which are now slurred over on account of want of opportunity would be sifted to the bottom and remedied if upon application to a Government Department, a trained researcher in the pay of the state could be supplied. The man could go to the works and clear up the difficulty if he could, and if he could not, and the matter was of sufficient importance, it would be passed on to the state institution for more complete research. The fee payable for such work should be fixed on a reasonable scale; and in cases where the whole industry gained a greater advantage than the individual firm, no fee should be payable.

We would thus have a new profession to which our mathematicians, physicists, chemists and engineers of all kinds could aspire, and in which their abilities would be much more actively employed than when they are compelled to seek a livelihood in some distasteful occupation. If we will only give the talents of our young men more to do, and pay for them better than we do, there will be no lack of good material presenting itself for training at our colleges. And then we must take care to turn out a finished product worthy of the fine raw Canadian material that goes through our hands. As Professor McLennan states, "the working out of a scheme which will embrace all these different types of activity will be a task which will tax the powers and capabilities of the Commission on Industrial Research. It can, however, be done and effected very speedily, if there is a general recognition of the difficulties involved and if a general and hearty desire be evinced by those whose co-operation is sought to assist in working it out."

A Building Series.

THE descriptive article appearing in the following pages and dealing with the new plant of the Dominion Sugar Company at Chatham will, it is hoped, be the first in a series of articles on the structural features of new Canadian industrial buildings. These articles are not intended, as some might possibly suppose, to serve as advertisements for the companies concerned. Their purpose is rather to keep readers of INDUSTRIAL CANADA posted on developments in the field of factory construction, with a view to furnishing those who may have building operations in prospect with ideas which may be incorporated in their own plans, or at least indicating sources of information to which they can resort for pointers.

There has been of late considerable factory construction in Canada. While many of the buildings erected are temporary in character and intended only for the pressing needs of the present, not a few are of a permanent character. The latter have been designed with a view to long service, and they embrace all the latest ideas in economical arrangement and equipment.

SHOULD ALL OUR CANADIAN RAILWAYS BE NATIONALIZED?

By S. R. PARSONS

First Vice-President, Canadian Manufacturers Association

IN order to enlist an active interest on the part of our members and evoke an intelligent discussion in connection with this great question, I propose in this paper to put forward some general statements bearing on the case which, of course, represent only my personal views, and in no way should be considered as the attitude of the Association on the matter.

This is one of the largest problems Canada has ever had to face and will require the best thought and most careful consideration on the part of our public men and private citizens in order to arrive at a proper solution of same.

Without considering, therefore, any of the plans and details involved, it ought to be at least interesting to view an approach to the question along lines that are readily suggestive though somewhat commonplace.

Before the war we were not accustomed to such large figures as have since been thrown upon the screen of our national existence in what has become almost a matter-of-fact manner. Huge capital expenditures that would formerly have staggered us do not frighten us any longer. The necessary burden of State-owned railways, worked out in various ways, especially keeping in mind the rights of interested shareholders, many of whom might possibly continue such a relationship, seems like a load that we could now well add to our national liabilities, but also, of course, to appear on the other side as an equal asset. A large portion of the load in any case has to be carried by the country; perhaps by assuming it all under proper conditions we could lighten the burden.

What is of vastly more importance to my mind than the question of the financial load involved, is the fact that great national war problems are preparing us to face big tasks seriously and resolutely. The economic situation which the war has forced upon us will compel Canada to grapple with all her great responsibilities, just as a private individual would a large business that demanded efficient, honest, and far-seeing planning and administration in order to ensure its successful working. We have many capable and straightforward public men who are serving and prepared to serve the nation. If we have others not of this standard, but who are merely party hacks, it is to our disgrace, and is the fault of the people if they are promoted to or retained in positions of trust. Woe be to any administration that puts forward such men in the crisis through which our country is now passing! The tremendous taxes which we must face will surely open the eyes of the people to the need of men of business ability, experience, and probity, to be at the helm of public affairs. Given these, there is everything to be gained by the nationalization of the railways as far as I can see.

While the railways would belong to the country, yet, no doubt, they would be put into the hands of a commission to manage and operate—a commission that would be removed altogether from governmental or political influence and control. If one great railway corporation in Canada can be so managed for a generation that it commands the admiration of our own Canadian people as well as others the world over, it surely suggests to us that the same kind of management if applied to all the railways of the Dominion—especially where foolish and unwarranted rivalry would have no part in the programme—would bring to the country equally good results. The commission-directed Ontario government railway is another shining example of what is possible in this direction. The important question of the railways being used in the interests of the country at large, considering its national interests, the development of its natural resources and products, especially its coal and other mineral areas, as well as manufactured articles, home and export trade, etc., will be obvious without elaboration here.

If the government owned the railways of the country surely one of the first things to be done would be to electrify some of the present steam roads, instead of building parallel electric lines in some parts of the country to further compete with the present surplus railway lines, which should never have had an existence. Thus, to a considerable extent, at all events, some of the regular railway lines that are now not serving new territory or population, but are simply providing unwarranted competition and are a drag on other portions which are necessary, could be made to serve a useful purpose. In short, the railways and the trolleys would work together in and for the interests of different communities of the people as a whole, rather than to satisfy the ambitions of promoters and others whose personal interests are paramount. Government ownership would make possible a properly balanced development of all parts, as sectionalism and private interests would disappear.

In the consideration of this great question of the public ownership of the railways it should not be overlooked that Canada has spent enormous sums of money on her canals, harbors, and waterways, but to little purpose so far as effective competition is concerned. The terminals, especially on the Upper Lakes, being owned largely by the railways, makes it possible by means of combinations and working arrangements to determine a scale of rates for all traffic that makes unnecessary anything in the nature of active and actual rivalry in rates, or to secure business on the part of the steamship companies or private owners. If the government owned the railways it would not be long before the waterways would be co-ordinated therewith and the entire country thus served to best advantage by all transportation facilities within the Dominion.



A Corner of the Electric Laboratory, Hamilton Technical and Art School

ELIMINATING HUMAN WASTE

By GEORGE L. SPRAGUE, B.A.

Principal, Hamilton Technical and Art School

ELIMINATION of waste in productive enterprises is of the first importance in the development of Canadian industries. Human wastage in modern industry exceeds all other forms of waste, and yet it has not received one tenth of the attention given by employers to other forms of wastage. Efficiency systems have been installed by manufacturers without number, covering the purchase of material, stores, routing work through shops, cost accounting, time-keeping and employment, and standard time and bonus, but very few have established any system to develop human efficiency. The percentage of waste in any industry will always depend upon the average unit of intelligence in the force of men employed. The man upon whom you depend to carry out your system is always more important than your system. A good man, nine times out of ten, will make a poor system work well, but no number of poor men will ever make any good system work well.

In modern industry, attention has been centred largely upon financing, equipment in buildings and machinery and material. The human factor has not been given the same attention. Waste in machinery and material has been carefully checked by most industrial firms, but human waste has not been accounted for in most accounting systems. Yet the cost of the human scrap heap is greater than that of machinery or material. In fact, human waste is a greater menace to the development of modern industry, along lines profitable to the nation in competition with foreign countries, than any other form of waste.

Train Men for Industry.

How are we going to eliminate this factor of human waste in modern industry? Obviously the solution is to train men for industry. If we are to organize an army of several million workers, we must have some kind of recruiting and training system. Modern industry has never had such a system. The condition of modern industrial enterprises in the United States and Canada, as concerns the great mass of the workers, is more like that of an industrial mob than anything else. It cannot be regarded as an industrial army by any means. It takes too great a stretch of the imagination to even ven-

ture to call the haphazard methods now used in recruiting and breaking in workers to specialized tasks in modern industry a system. It is out of the question to consider the workers as an army. That implies drill, organization, intelligent co-operation toward the achievement of the commander's plan of campaign, marching efficiently to definite objectives. There is nothing like that in modern industry considered as a whole.

Organize the Industrial Army.

There are over 18,000,000 workers engaged in manufacturing enterprises in the United States and Canada. It takes over 2,000,000 recruits each year to keep up this army of workers. How are these recruits prepared for their duties? When Lord Kitchener raised an army of 4,000,000, what methods did he use? Did he throw them into the thick of the battle without training? That army was at first a mob, Kitchener's mob, a great aggregation of clerks, shopkeepers and laborers. He proceeded to drill and equip that mob, and in a year or so sent into the greatest struggle for human liberty in the history of mankind the greatest army ever organized in such a short space of time. But the captains of modern industry show no such imagination in organizing a far greater industrial army. School statistics show that 75 per cent. of the children who enter school leave between 14 and 16 years of age to work in mills, factories and stores. These young recruits to industry are employed in highly specialized tasks. They drift from job to job, and in later years settle down to become specialists, handymen and unskilled laborers. Hardly one in a hundred ever obtains a chance to become a skilled worker or master of a trade.

Over two million children and youths are being recruited to industrial and commercial enterprises every year in the United States and Canada. These raw recruits are simply thrown into new conditions and relations without any definite training for their tasks. The percentage going to work at this age with definite training is but a drop in the bucket. What wonder that employers bewail the shortage of skilled workers. What wonder that the labor market is overstocked with masses of unskilled workers. It is folly to expect that,

without any definite system of training, such a mob of raw recruits can be transformed into an efficient industrial army. The spasmodic efforts of a few employers here and there will never meet the need. The wise efforts of a few cities which establish trade schools will not suffice. The provision to meet this situation must be as large in scope as the numbers involved. Some form of training for life should be provided for all who enter agricultural industrial and commercial occupations.

The problem for Canada will be greater after the war than in normal times of peace. There will be half a million soldiers to take care of then, and an army equally as large must be shifted about, and in some cases displaced, to make room for the men who have served their country in the hour of need. Facilities for trade and technical training must be multiplied as never before in the history of the nation if

Technical education in the province will fail unless it has the unreserved co-operation and support of employers and workers. The most obvious form in which employers can further technical training in modern industry is by reviving apprenticeship in a practical form. The old forms of apprenticeship are obsolete. We no longer think of binding out a boy of 12 or 14 years of age to some master workman until his majority. That was possible in the days of the handicrafts. The factory system of production has displaced the handicrafts, likewise their related forms of apprenticeship.

A later form of apprenticeship sprang up with the factory system, consisting of a four-year contract. Under this form of apprenticeship, employers signed up boys at a low scale of wages, threw them into their shops and left them to the tender mercies of foreman and fellow workers. No definite



One of the Workshops, Hamilton Technical and Art School

we are to hold our place in the development of modern industry and commerce. Canada must enter into competition with other nations to supply goods for her own consumption, instead of remaining dependent so largely upon foreign products. Then, too, we must develop our manufacturing industries, so that our products may be sold in competition with other nations in the world's markets. There is just as much potential skill in the brains and hands of Canadians as that possessed by any other nation on earth. Why should not these resources in man power be utilized?

The Province of Ontario now maintains an excellent system of supervision and aid for the development of technical education. Liberal grants are made to many cities for the support of general industrial classes, evening trade classes and continuation classes for the training of apprentices. Toronto has one of the finest technical schools on the continent, and London has erected a fine building, to house this most useful form of education. Hamilton established the pioneer trade school of Ontario in 1909, and plans even greater things in the near future in technical education.

provision was made for their training. What they learned of the trade they picked up. The result was, in most cases, that the boys became dissatisfied. They asked for bread and received a stone. The inevitable result followed, apprentices jumped their jobs at the first opportunity, and employers soon began to complain that they could not obtain good apprentices, and that when they did get them they could not keep them. Employers then became disgusted with the attempt to maintain even an appearance of an apprenticeship system. They settled down to depending upon the supply of skilled workers imported from abroad or those they could steal from each other by the bribe of higher wages.

The making of men for the industries of the nation is essential to success. We must begin to make men first and quality of product will come as sure as day follows night. Even with the increasing multiplication of labor-saving machinery and devices comes the demand for skilled workers who can properly operate many of these machines and keep them in repair. An army of skilled workers is required at all times for maintenance as well as for operation. The



Students at Work in Machine Shop

making of men must be made an accounting factor. It must be made a shop cost, just as is material, machinery, buildings and administration. The human scrap heap must be eliminated if employers ever hope to successfully reduce the size of the scrap heap composed of material, machinery and tools.

Apprenticeship can be revived in a practical form which will go far toward contributing skilled workers to the trades and industries of the nations. In the last ten or fifteen years many large corporations in the United States and Canada have developed what is called a national system of apprenticeship. It consists of four years' training, with definite instruction in trade practice in the shop under a competent mechanic, and two hours' instruction twice a week in a classroom in the mathematics and drawing related to the trade. The New York Central Railroad Company was the first to establish this system upon a large scale. The result of that movement is that to-day there are over one hundred and twenty apprentice schools, maintained by the railroads on this continent. The Santa Fe Railroad Company has over one thousand apprentices under this system of training at different points along its lines. Large manufacturing firms, such as the General Electric Co., Westinghouse Electric and Manufacturing Co., Allis Chalmers Co., and the American Locomotive Co. have a similar system. The National Association of Corporation Schools is an organization of representative employers and apprentice superintendents and instructors working to further this work.

In many other cities in the United States the training of apprentices is being revived in co-operation with public and private trade schools and technical high schools. In Cincinnati, part-time training of apprentices has been developed upon a large scale; in St. Louis, in co-operation with the David Ranken, Jr., Trade School; in Chicago, at the Lewis Institute and the Technical High Schools; in Philadelphia, at the School of Trades; in Fitchburg, Beverley, Worcester and Boston, Mass.; in New Haven and Bridgeport, Conn., and in many other cities.

The plan in these cases is for employers to allow apprentices to attend the trade or technical school one-half day each week for instruction in related drawing and mathematics.

This system of part-time instruction of apprentices has been established in Hamilton. The Canadian Manufacturers Associa-

tion, the Employers' Association, the labor unions and workers in general are supporting this work. Eighteen different firms are now sending their apprentices to the Hamilton Technical and Art School one-half day each week. One firm sends about forty apprentices, and over seventy are now enjoying this opportunity for self improvement. It is not a philanthropical or spasmodic movement on the part of the employers who are co-operating, but a wise business investment. The employers represented so far are: The Acme Stamping and Tool Company, Canada Steel Goods Co., Canadian Westinghouse Co., Davis Printing Co., Dominion Pattern Co., Duncan Lithographing Co., Robt. Duncan Co., Ford-Smith Machine Co., Frost Wire and Steel Goods Co., Griffin and Richmond Printing Co., Howell Lithographic Co., International Harvester Co., Moore Printing

Co., National Steel Car Co., Seager Press Co., Standard Underground Cable Co., Spectator Printing Co., W. H. Yeates, Jr., Contracting Co.

These apprentices attend one-half day each week and are paid for the time spent in school. Hours of instruction are from 1.30 to 5.30 p.m. Regular weekly reports are made to employers of the actual time apprentices attend and of their progress and application to the school work. Instruction of machinists, tool-makers and pattern-makers is in drawing and mathematics related to the trade. Electrical workers are taught not only drawing and mathematics, but also the science of electricity. Bricklayers and carpenters are taught architectural and building construction mathematics. Lithographer apprentices are taught commercial design and lettering in the Art Department. Printers are taught type setting, job and advertising design, English and also commercial design in the Art Department.

This consideration shown by the employers for the improvement of apprentices is, in most cases, stimulating the apprentices to show consideration for their employers. It is an investment in the making of men which gives promise of proving as profitable as any other form of manufacturing. Instruction is given by expert mechanics and engineers, and the school has the necessary equipment and demonstrating apparatus to make this trade training efficient. In this way the Hamilton Technical and Art School is becoming a part of the industrial and commercial life of the city, and is using its equipment and teaching resources for the benefit of employers and workers in various trades and industries.



View of the Drafting Room

The efforts of the school management do not end with this work of part-time training of apprentices. An even more important development this year are the classes of boys who attend five days a week for instruction in various trades and in engineering. These boys constitute excellent apprenticeship material. The trade training consists of instruction in drawing, mathematics, physics, electricity, English and trade practice. Shop work in all cases is productive. All school repairs are made by the school shop gangs. This work includes furniture and fixtures for office and classrooms from the woodshop; all the electric light and power wiring and all machinery and tool repairs. The electrical laboratory class rewound a 1 h.p. motor and installed it to operate the school ventilating fan; made a large rheostat, installed the test motors and generators and built the switchboard in the electrical laboratory. The machinist gangs have turned out jobs for several Hamilton firms, consisting of lathe gears, motor shafts, crank pins, and other machine tool parts. The print shop does all the school printing and considerable for the Board of Education. Drawings have been completed in the drawing department for a sensitive drill press, which the school will manufacture and dispose of to the trade. This will supply work for the machine shop. In the other departments products will be turned out in the same manner. The

school is being transformed into an education shop, manufacturing a commercial product, for two reasons, first, to cut down the cost of operation, and in the second place, to give boys a real trade training. The educational value of productive work in trade training is far ahead of exercises. Every one of these day boys will be placed with some Hamilton employer and be given an allowance upon a regular apprenticeship for the time spent in the school. If a boy spends one year in the school and does good work, he will be placed in the second year of a four-year apprenticeship. The boy who works in the school from 14 to 16 years of age can enter the third year of an apprenticeship, and be farther advanced and of more value to an employer than a two-year shop apprentice who has not had such school training.

The school management seeks to make the Technical and Art School a clearing house for apprenticeship in all the trades and industries of the city. The principal endeavors to meet the needs of employers inquiring for apprentices, and during the past year has obtained for several employers good apprentice material.

In this manner the employers of Hamilton have joined with the Technical and Art School to eliminate human waste in industry by training skilled workers. It is a constructive remedy in the largest meaning of the term.

A VIEW OF NECESSARY ACTION FOR AFTER-WAR CONDITIONS

By T. R. DEACON

President, Manitoba Bridge and Iron Works

An address delivered before the Prairie Provinces' Branch of the Association at Winnipeg, January 30th, 1917

WHEN the Chairman did me the honor to ask me to speak to-day, while I greatly appreciated the courtesy, I nevertheless felt very much in doubt, as I apprehend that what I am about to say may be misunderstood in some quarters, and through the difficulty of adequately expressing just what I want to say, my real meaning may be misapprehended. However, so serious a time is this that I believe that any one who thinks that he has a helpful or constructive idea should not be afraid to express it.

I think that I can perceive before us people of Canada, upon the termination of the war or even before it if the war should continue for some time longer, a very serious condition of affairs in which our whole ideas of values and conditions will be radically changed.

Canada's Public Debt.

At the close of the war we will have returning to this country perhaps half a million men whose whole tenor of life has been altered and who must again be fitted in some way into their respective niches and absorbed in civil life. But of these many will have been seriously maimed and injured in health so that they will not be capable of earning their own living and these heroes must be taken good care of, even if the rest of us have to go on half rations. This will inevitably result in a large pension fund to be provided annually. In addition to this there will be the burden of debt, due to the war, and which is mounting at the rate of about one and a half millions per day, in addition to the already great debt we had before the war.

A short time before the war broke out, during my second year as Mayor, Sir George Paish visited this country in the interests of the people who had loaned such great sums in

Canada, and I had the pleasure of a long talk with him. He told me that at that time there had been borrowed in Canada by the Dominion and provincial governments, by municipalities, railroads and private industrial companies, such as steel, coal, cement and flour milling companies, and by the banks themselves and loan companies, the large sum of \$3,000,000,000 on which the interest alone, without return of principal, was nearly \$150,000,000 per year.

Now, should the war continue, say, another year beyond this, we will have collectively a debt of about \$5,000,000,000, which will require an annual interest payment of \$250,000,000, or over \$30 per head for every man, woman and child in the country. That interest we must pay, or else acknowledge before the world that we are bankrupt, our credit gone, and we can get no more capital. To meet that annual payment we have only four sources of wealth open to us: it must come from the soil, the forest, the fisheries and the mines of Canada. Individuals may prosper by merchandising and even get rich, but buying from one and selling to another at a profit does not add to the national wealth, unless one at least sells to a foreign country.

Returned Soldiers.

There have been a number of addresses given by different men in different parts of the country on the question of settling the land and of putting the returned soldiers on lands in the Peace River District. Personally, I do not believe that any large proportion of the soldiers who have not been on the land before will go there. They will be unfitted by their life and experiences as soldiers to settle down to the life of a pioneer farmer, unless, as I say, they have been farmers before, and they will, undoubtedly, congregate in the cities and

towns, looking for some agreeable employment there, and who can blame them?

Now the thought that I have had and which I shall try to express is this; that this mass of human energy can be used profitably and that it can powerfully contribute to the production of the new wealth required to pay the \$250,000,000 annual interest on our borrowed capital. We have heard for a lifetime the familiar phrase in the mouth of every public speaker, about the development of our natural resources, but what has really been done? While the platform orator has talked of the development of our natural resources, we have done little else than plunder, dissipate and even burn our natural resources. We must contrive a way to stop that and actually proceed by a definite and concrete plan to apply this mass of human energy to the actual conversion of these natural resources into exchangeable wealth.

Preserve Our Resources.

How can this be done? By ceasing to import manufactured articles that we can make at home, by peremptorily stopping the export of our raw materials, particularly those on which we have a virtual monopoly and by the use of our own labor making them into finished goods. Not a cord of pulpwood should be allowed to go out of the country, except as paper. We have millions of horse-power of water-power going to waste that can be used for this purpose. Not a pound of nickel or cobalt ore should go out except in a finished state. Our beef, pork, fish, etc., should be handled in the same way, and on the other hand every instrument that the people use that can be made from Canadian wood or metal, should be made here and the tariff should make this possible.

That is where I may be misunderstood, but wait a moment, my Free Trade friend. Every observant person must be struck with the enormous waste of energy and capital all over Canada where, in a country with such a small population there are so many rival plants, each engaged in such a death struggle with the others in the same line that none of them can grow properly, and at the same time the consuming public are under the belief that they are piling away in vaults enormous sums of gold coin. To overcome this national weakness. I suggest that a comprehensive and strong policy be worked out so that the Government would come in as a partner, that is the whole people of the country become shareholders in the real development of the natural resources and their conversion to negotiable wealth at their highest point of value. This can be done by the combining of the resources of several plants, centralizing their business at the best situation for receiving raw material on the one hand and distributing finished goods on the other. The establishment of industries requires large sums of ready capital—in many cases the Government should arrange to loan them money or credit, protect their home market with a high tariff and in return should control prices and profits, allowing the private capital only a reasonable and safe return for its use and the energy and services of those who administer them, and taking for the payment of the interest on the national debt any surplus over that amount.

Buy Home-Made Goods.

The principle could be applied to all lines of enterprise, even agriculture. By making what we use ourselves, we avoid sending our money out of the country and we give employment to our own people. The time is too short at my disposal to elaborate this theory to-day, but no one will, I think, question the fact that we have great natural resources, but that by shipping so much of them away in a raw state, we get little benefit from them in a national sense. Last year we imported into Canada five hundred and seven million dol-

lars' worth of merchandise, a large part of which could have been made here and a considerable part of which was actually made from Canadian material. A man at a point in Okanagan was complaining, one day last autumn, about being unable to get a market for his fruit; it was spoiling for a market. He was dumping it in the lake to get rid of it. He had a store also, and on that very day he was unloading a car of jams from England. The people who ate that jam, ate a lot of freight and duty with it. We must get over that and use our home products.

We must get over talking about developing our natural resources, and develop them, and talking about establishing industries. We must not only establish them, but support them. The government, the whole people must help, and at the same time we must guard against the occasion being used for the production of undue private profit.

If some strong definite policy like this were adopted, we could produce our goods at prices, so that by co-operative selling we could dispose of them at profitable prices in foreign markets and, far from falling into bankruptcy, we would pay every obligation both of finance and honor and emerge at length a strong, full-lived nation, thoroughly established on a basis of equity and the nations noting our desirable condition and the ample land room at our disposal, the tide of immigration would again set in, and by exercising a careful selection in the people we admitted and by maintaining a policy of staunch Canadianism, we would soon be one of the most prosperous and happy people in the world.

INDUSTRIAL LONDON.

Several Interesting Items about Activities in the Industrial Section of the Forest City.

Gordon Philip, secretary of the London Board of Trade, furnishes the following particulars regarding recent industrial developments in London:—

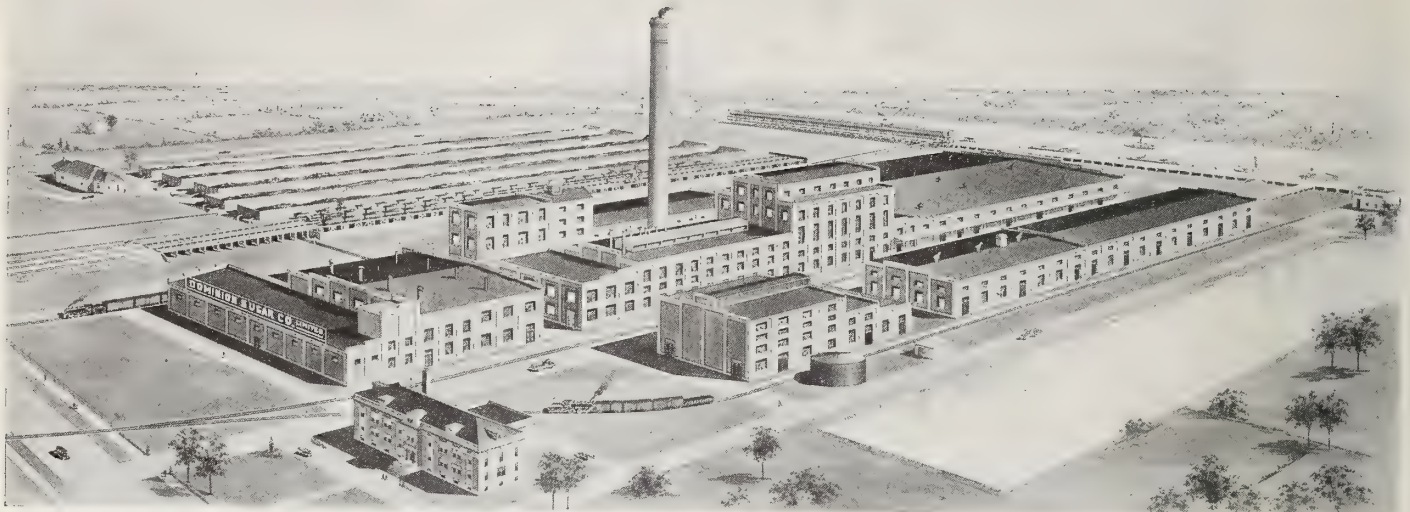
The Hobbs Mfg. Co. contemplate building a large extension to their local art glass, etc., manufacturing plant.

The Quaker Oats Co., whose Canadian factory was recently burnt out at Peterboro, have purchased the plant of the Canadian Cereal and Flour Mills Co. here, and will carry out extensive developments there for the manufacture of their product.

Beatty Bros., Ltd., of Fergus and London, manufacturers of pumps, grain grinders, etc., have decided to locate their foundry at London, in the Chelsea Green industrial district. This will be started immediately and will cost approximately \$30,000. This development is only the beginning of plans for London, where it is expected they will before long employ between three hundred and four hundred hands. A large site was given free of cost to Beatty Bros. through the Industrial Department from the Chelsea Green Land Company.

The London Smelting and Refining Company have purchased the old power house of the London and Lake Erie Railway at Chelsea Green, London, and has converted this into a plant for the smelting and refining of metal under the management of Mr. George Trudell.

The United Metal Products Company, recently formed by local capital, has taken over the factory building formerly occupied by the Jose Gaste Cigar Company on King Street, and will manufacture munition parts.



Plant and Surroundings of the Dominion Sugar Company's New Beet Sugar Factory at Chatham

THE NEW SUGAR FACTORY AT CHATHAM

A description of the building and equipment of one of the latest industrial plants to be erected in Canada

By W. A. CRAICK

AMONG the most notable developments of recent months in the field of Canadian industry must be placed the completion of the new million dollar beet sugar factory of the Dominion Sugar Company at Chatham, Ontario. With the exception of two plants in California, the third and latest plant of the Dominion Sugar Company ranks among the largest on the continent, while in design and equipment it may be regarded as in the forefront of similar industries in the world.

The factory stands on extensive property lying between the main line of the Canadian Pacific Railway and the River Thames, about a mile from the centre of the city. Its construction was commenced in the late fall of 1915, and the plant was sufficiently completed by December 1, 1916, to admit of its being operated on last season's beet crop. There are still some finishing touches to be put to the equipment and one or two buildings are yet in an incomplete condition, but the whole establishment will be in readiness for service this year. When the finishing touch is put to the work of construction, the plant will represent an investment of a million and a quarter dollars.

From the structural standpoint, the sugar factory itself and the auxiliary buildings surrounding it are very perfect specimens of modern construction. Heavy concrete foundations underlie the various structures. Upon them rest ponderous steel frameworks and on the frameworks are carried the heavy

loads incidental to the complicated apparatus and machinery of the factory. The walls, which are merely curtains, are of brick, while floors and roofs are of concrete, windows are of metal sash; and stairs are of metal with metal railings throughout. Except for certain of the doors and the wooden casings on the evaporators and vacuum pans, there is scarcely a scrap of wood to be found on the premises.

Including the warehouse, which is itself 201 feet long, the main building has a length of 518 feet. Its width at the beet end is 141 feet and at the sugar end 73 feet, with 141 feet again in the warehouse. A boiler room, 159 x 42 feet, and a kiln room, 48 x 54 feet in dimensions, adjoin the main building and fit into the gap between the beet end and the warehouse. The pulp drier and pulp warehouse form an independent unit of the plant, the former being 91 x 90 feet and the latter 141 x 51 feet in size. A power house, 50 x 69 feet, machine shop and cooperage, complete the present equipment. To it will be added a barium plant, 71 x 69 feet, a raw sugar warehouse, 189 x 69 feet, and an office building, 108 x 60 feet.

In the erection and equipment of the plant, preference was given to the greatest extent, compatible with efficiency, to Canadian materials and machinery. This involved in several instances the construction by Canadian firms of apparatus hitherto procurable only in Germany, but the resources and ingenuity of the Canadian workmen proved equal to the



Progress of Erection, July 18th, 1916



Progress of Erection of Immense Storehouse, 141 x 201 feet in size, as at August 14th, 1916

occasion. The structural steel was secured from, and erected by, the Canadian Bridge Company, Walkerville and the McGregor, McIntyre Co., Toronto. The brick was procured from a brickyard adjacent to the Sugar Company's property. The greater portion of the machinery was made in Canadian plants, the local establishment of Parks Bros. being loaded to capacity with orders.

The boiler installation, which is well illustrated in one of the accompanying views, consists of twelve upright water-tube boilers, this being the type which has been found most advantageous by the company in the past. Each boiler has 333 h.p. capacity and is fired by either natural gas or coal, as desired. The Westinghouse stoker is attached to each boiler, and there is a flume running under the furnaces to carry off the ashes. The beet sheds cover a wide area to the left of the main factory, and are of wooden construction, 452 feet long. Two of them are fitted with elevated tracks, from which the beets can be dropped from self-dumping cars. There are, in addition, three level tracks extending between the sheds, for the accommodation of ordinary cars, and three wagon roads for the use of farmers hauling in their own product. At the river side there is yet another large shed, into which beets brought to the factory by water are hoisted. The company owns about thirty scows and two tugs, and anticipates conveying large quantities of beets to the plant by this means. Altogether the beet sheds have a capacity of 12,000 tons.

For lifting the beets from cars or scows, clam-shell cranes are utilized. These have a fifty-foot boom and can pick up a ton of beets at a time.



View showing how Machinery was Installed before Walls were bricked in

the third. There are twelve filter presses, nine of which are of the new self-dumping type and three are plate presses. There are five evaporators, with 73,000 feet of heating surface. There are four vacuum pans, fourteen feet in diameter, each dropping 80,000 lbs. of refined sugar every two hours. For spinning off the syrup after this process, twenty-four centrifugal machines are provided, while there are in the equipment eight crystallizer tanks.

The power plant is equally well safeguarded. The main engine, furnishing power for the plant, is of over 500 h.p. capacity. There are two generators also of 500 h.p. each, driving two dynamos producing 350 k.w. apiece. The centrifugal machines are operated by two pressure pumps, and there are also duplicate pumps to drive the carbon dioxide gas from the lime kilns to the carbonation tanks.

Throughout the entire plant special pains have been taken to conserve heat. Thus the evaporators and vacuum pans



Machinery of a type hitherto made only in Germany but manufactured for the Company in Chatham

are covered with mineral wool and sheathed in wooden lagging. On all the low temperature steam pipes asbestos covering has been placed, and on the live steam pipes magnesia covering. In a process where so much heat is required, its conservation is obviously of very great importance.

Attention has also been paid to the question of fire protection. The plant is supplied with a ten-inch water-line from the city system, and this is equipped at suitable intervals with seven three-way fire hydrants. Provision is also made that, should the city pressure run down, the company's high

ported largely from Germany, the company has been experimenting successfully at its experimental farm, and is now growing its own supply.

In dealings with the farmers the company has endeavored to adopt a reasonable and fair policy. The basis of payment is the percentage of sugar content in the beets, but over and above this, when the price of sugar is high, adjustments will be made so that the beet-grower will share with the manufacturers in the higher profits accruing.

The industrial chemist naturally plays a prominent part in the industry. He it is, or one of the number of his staff, who determines the sugar content of the loads of beets constantly arriving at the factory, while in the process itself frequent examination of the product as it passes from one series of operations to another has to be made. To attend to these functions, laboratories have been equipped, a large one being placed in the very centre of the sugar factory and a smaller one at the tare house, where the beets arriving are tested and weighed.

While primarily a beet sugar factory, the new plant, like the company's Wallaceburg plant, is also equipped to refine cane sugar. In this connection it is proposed to bring in the raw sugar by water. The completion of the new Erie Canal from New York to Buffalo will be of great assistance in this particular, and it is expected that it can be utilized without the necessity of trans-shipment at Buffalo, the barge conveying the raw sugar coming



An interesting view of the Boiler Installation previous to bricking in of the Walls

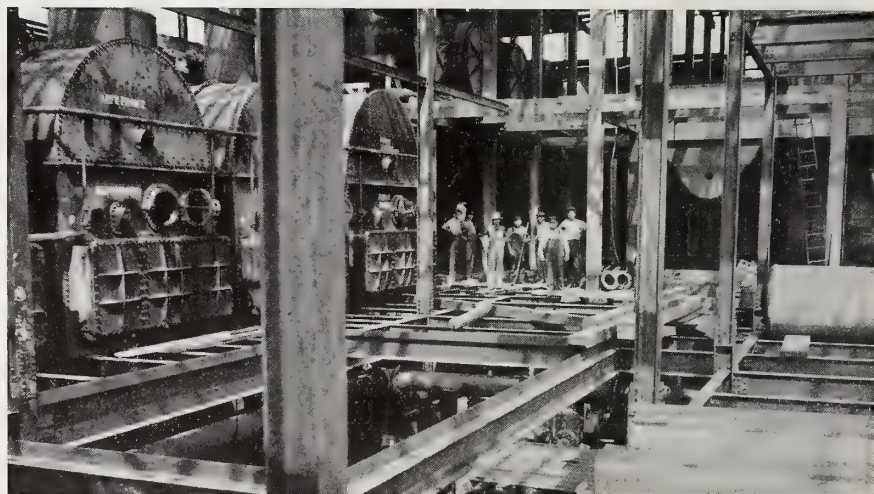
pressure pumps can be turned on to the system.

It is not the intention here to refer to the process of manufacture used by the company. It is worth noting, however, that careful attention has been paid to the utilization of by-products. At least two large buildings in the plant have been designed for handling the latter. Thus, the beets themselves, after the sugar content has been extracted, are conveyed into the pulp department, where they are dried in kilns and converted into a valuable cattle food, now much in demand among farmers, known as sugar beet meal.

Finally the mother liquor, which is left after the sugar has been extracted from the molasses at the sugar end of the factory, is run into the barium plant and converted into fertilizer. This utilization of by-products has been of great importance in the industry, and in some respects has constituted the difference between success and failure.

The new Chatham plant of the Dominion Sugar Company is the third plant owned by the company. The others are located at Wallaceburg and Kitchener. The Wallaceburg plant can average about 850 tons a day and the Kitchener plant 800 tons. The Chatham plant is designed for 1,800 tons a day, but it is expected that 2,000 tons a day can be produced without much difficulty, when running at full capacity.

One of the serious problems of the past has been the securing of sugar beets. This difficulty is now being surmounted. Farmers are becoming more interested in growing the beets and are finding their cultivation easy and profitable. And, so far as seed is concerned, which used to be im-



The weight of the machinery is carried entirely by the steel framework

direct from New York to the company's own docks at Chatham. A large warehouse has yet to be built to hold the raw sugar shipments.

The investment of so large a sum of money in the beet sugar industry in Western Ontario bespeaks the faith of the capitalists back of the company in the venture. Some years ago several establishments were started in this part of the country to manufacture sugar from beets, but for various reasons none were successful, and all were closed down except the Wallaceburg plant. The latter struggled along and finally succeeded in turning the corner. The Dominion Sugar Company, which controls all three Ontario plants, is owned by an influential group of Canadian and American financiers.

ELECTRIC HEATING IN THE INDUSTRIES

A constantly and rapidly growing field for the application of electricity

By ANON

(Article and illustrations reprinted by courtesy of the "Scientific American")

THE past year or two has demonstrated conclusively that there are numerous manufacturing operations where electric heating, despite its high initial cost and after taking every factor into consideration, is the most satisfactory agency in carrying out certain important heat-treating processes.

If the applicability of electric heating were to be judged solely by its initial cost as compared with other forms of heating, it would seldom survive the first phase of an analysis; indeed, there would be no analysis, for the cost would be an item immediately apparent. Such is not the case, however, for it is now a recognized practice not to consider the relative cost of electricity and gas, oil, coal and other fuels, in passing upon the applicability of electric heating. There are other factors of far greater importance which must be considered, such as the improvement in quality of work; rate of doing the work, that is to say, increased production; reduction in floor space occupied by equipment; ease of handling the work; reduction of fire and explosion hazards; improvement in sanitary conditions; elimination of transportation and storage of coal, oil, gas and other fuels; and similar considerations.

Electric heating can rarely be standardized for each industry as a whole; each application must be considered as a separate problem, lest electric current be misapplied in heating operations and thereby retard what is regarded as the most promising load builder for central stations. Even the limited number of industrial heating devices which can be considered commercially standardized offer opportunities to add greatly to the connected load of the power companies; and such applications as the baking of japan, foundry cores, and bread; drying paints and insulation materials; melting wax, brass and white metals; boiling varnishes; heating glue, soldering irons, etc.; and sherardizing metal, offer extensive fields for the exploitation of electric heating and the taking of load which, in a great many instances, is for the off-peak period which every power company is anxious to fill out.

Typical of the many forms of electric heating are the new japanning ovens, core ovens, bread ovens, the melting of brass, and sherardizing. Of late notable progress has been made in applying electricity to the baking of japan, and in one plant alone some 20,000 kilowatts of current are used for this purpose, while in another company ovens are being installed of 15,000 to 20,000 kilowatts capacity. Still another manufacturer is using about 3,500 kilowatts; and numerous installations have lately appeared, ranging anywhere from 50 to 250 kilowatts per equipment. It is said that to-day there is a total

of at least fifty-one companies using electricity for baking japan, representing in the aggregate a connected load of about 45,000 kilowatts.

Some progress has been made in equipping core-baking ovens with electric heating apparatus, and the results are said to promise much for the future. The writer's attention has been directed to an oven for baking cores used in the manufacture of small brass and copper castings, where certain portions of a given casting are of considerable thickness while other portions are quite thin. Such cores, obviously, are difficult to bake properly, especially if the temperature is not maintained at the correct value, for incorrect temperature may cause the thin portion to be overbaked, while the thick portion may be underbaked. Before the particular oven in question was changed, there was a large loss of cores, due to the difficulty of maintaining an even temperature; but since the oven has been electrified the operator reports that not a single core has been lost. And, while better castings are now

obtained, there is a saving in time ranging from 25 to 30 per cent. in the baking process. On the other hand, where cores are of large dimension and the castings need not be accurate as regards sharply defined edges and faces, electric current may not always offer sufficient advantages to warrant its employment.

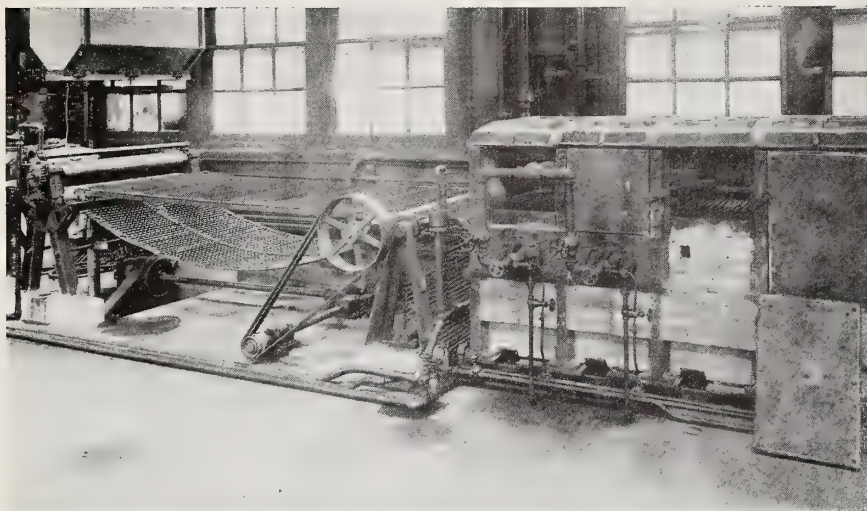
In the baking of bread and pastry there appears to be more promise in the future than in the past, for this field of electric heating has

been rather slow in developing. This may be due to the fact that the characteristics of electric heating, particularly uniform temperature, are not as essential to successful baking as they are to other industries. However, the cleanliness of electricity should do much to further its use in the bakery in those regions where the cost of current is not excessive; and many central stations are striving hard to introduce electric ovens in the bakeries in their territory, since it would mean a large connected load.

Electric heating is applicable to low temperature operations as well as to those of high temperature of an order sufficient to melt steel. Examples of the former kind are to be found in heaters which have been developed for low temperature applications. These heaters are made up by mounting a number of units on a metal frame, each unit consisting of a thin metal strip on the edges of which insulating blocks are carried. These blocks are made of a compound which will retain its insulating qualities at the temperature to which they are subjected, and at the same time are strong enough to



Installation of 350 electrically-heated jacketless glue pots



An enameling furnace for small parts, using electrical heat

withstand rough service without cracking. Notches on the edges of the blocks made a winding form for the flat resistance ribbon, and the blocks serve further to insulate the ribbon from the metal supporter. The units are assembled in an iron frame and are insulated therefrom by blocks of the same compound. The frames, in turn, are provided with feet for mounting in the oven, and are made in standard forms for mounting on either the wall or floor. These heaters are available in capacities from 1.3 kilowatts to 12.3 kilowatts, and are standard for voltages up to 480. The temperature range for which they are suitable extends as high as 900 deg. Fahr. in the oven.

In most cases it is desirable automatically to maintain the requisite temperature in electrically-heated industrial ovens, although experience shows that there are cases where manually-operated panels are quite satisfactory. In some instances all the heaters are connected to and disconnected from the supply circuit in periods which will maintain the proper temperature; in other instances it is better practice to connect and disconnect a portion of the heaters; still in other instances the heaters should be grouped. In the case of direct current equipment provision should be made for connecting the groups in series or in parallel, while in the case of alternating current equipment provision should be made for making "Y" delta connections of the heaters.

With the present state of development in electric heating few, if any, commercial applications have been made of electric furnaces for melting brass. Yet manufacturers have reached a point where it is safe to predict that in a short while these devices will be available for commercial applications. And we have only to consider for a moment the millions of pounds of casting that are made from copper and brass every day to grasp the importance of this development to central stations. The conditions are favorable since with the electric furnace properly developed the temperature can be held practically constant at the point best suited to the work; stack losses can be reduced to a minimum; and a non-oxidizing atmosphere can be maintained.

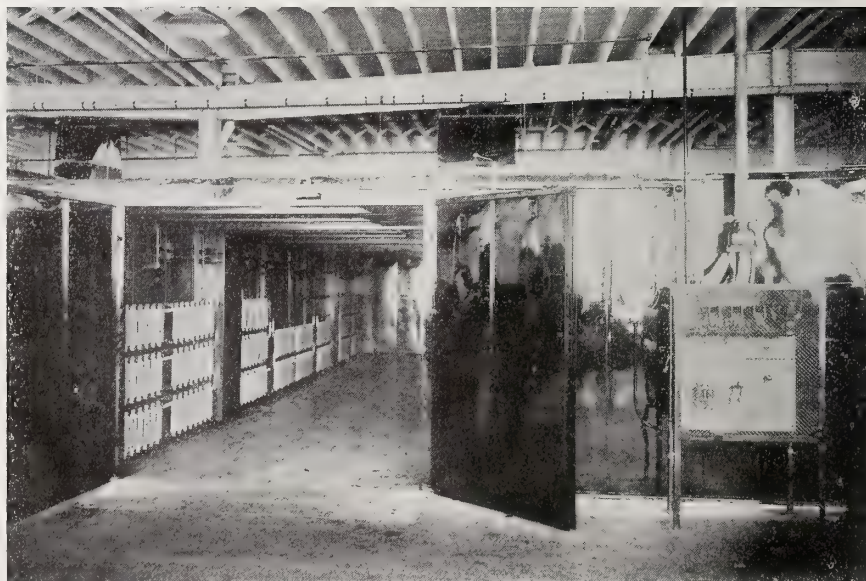
In one brass foundry which the writer has in mind nearly 1,000,000 pounds of brass are melted every working day. From tests that have been carried out it is safe to estimate

that this work can be done with a consumption of electric current not greater than 300 kilowatt-hours per ton. It is probably conservative to state that the net losses in the best brass foundries are not less than 1.2 per cent. From tests which have been conducted in melting brass electrically it is safe to assume that these losses with the electric furnaces will not exceed .3 per cent., or a saving of .9 per cent. Now, then, on the basis of melting 1,000,000 pounds of brass per day, the employment of electric heating should net a saving of 9,000 pounds; which means that out of 1,000,000 pounds of metal put into the furnace the manufacturer would obtain 9,000 pounds more ingots. These ingots, say at 24.8 cents per pound, would amount to \$2,232 per day. With a current consumption of 300 kilowatt-hours per ton and at a rate of one cent. per kilowatt-hour, the cost of current for melting the 1,000,000 pounds of brass

would be \$1,500; and on the basis already mentioned there can be credited to the use of electric heat a saving of \$732 per day, or per 1,000,000 pounds of brass melted. Furthermore, since the electric current is replacing some other form of fuel, the \$732 saved would amount to considerably more when the cost of the usual fuel is taken into consideration.

There is a large field for the employment of electricity in the process of sherardizing, which consists of baking ferrous metals in zinc dust so as to make them rust-proof. For example, there are many parts about an automobile which, when made of nickel-plated steel, rust very readily under ordinary weather conditions. Likewise it would be highly desirable in most cases if bolts, nuts, nails, tools and other articles were treated in some manner in order to make them rust-proof. This protection, or sherardizing, can be best accomplished by baking the metal parts with zinc dust of the correct chemical analysis, at a certain predetermined and constant temperature for a period of time depending upon the thickness of the coat desired. The most satisfactory results with this process are obtained by the use of electrically-heated sherardizing ovens.

The importance of the sherardizing process cannot be overestimated. Take, for example, the many manufacturers who



Electrically-heated japan-baking ovens in an automobile factory



An electric core-baking oven



Potash kettle with circulation heaters

are making certain parts of their product out of high-priced, non-corrosive material such as bronze and brass, when low-priced ferrous material could just as well be substituted, provided it were properly sherardized. Electric heat renders sherardizing a comparatively simple process by the use of an electrically-heated revolving oven mounted on trunnions that are supported on pillow blocks. Typical ovens measure 40 by 24 by 24 inches, inside dimensions, and call for an input current of 53.5 kilowatts for about three hours, and 13.5 kilowatts for three to four hours. Smaller ovens, measuring 10 by 10 by 17 inches, inside dimensions, call for a current consumption of 15 kilowatts for three hours and 5 kilowatts for three to four hours.

In establishments where there is a considerable amount of gluing to be done the use of electric glue cookers and pots does much to enhance the efficiency of the workmen. The advantages of self-heated, portable glue pots are immediately obvious when electricity is the source of heat. The most popular of these pots are generally of two types—the jacketless and the water-jacketed kind. The former is of cast aluminum, except in the smallest size, chosen for its high thermal conductivity. The walls of the pot distribute the heat evenly and prevent overheating. Only one heat is provided, and, where the line voltage is fairly uniform, and quick initial heating is not imperative, this style is much in favor. The water-jacketed style consists of a sheet aluminum glue vessel and a cast iron water bath. Two heats are provided—high heat for quick, initial heating, and the low heat for maintaining the temperature of the glue.

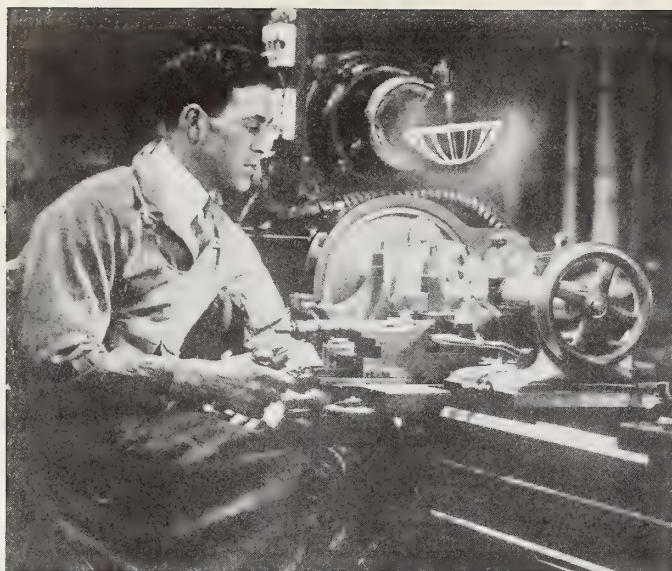
Establishments using large quantities of glue obtain better results by preparing the glue in one or more large central cookers, from which it can be transferred to small pots and kept at the proper temperature, for use at any point desired. The electrically-heated glue cooker used in connection with

individual electric glue pots makes an ideal equipment. The cooker, of course, is thermally insulated.

One might go on almost indefinitely in describing the divers applications of electric heat in the industries, for there are few heating operations where electricity cannot be applied. Liquid heating tanks, melting tanks, oil tempering baths, pouring pots, linotype and monotype pots, steam and hot water boilers, circulation heaters, soldering irons, pressing irons, burning in irons, stoves and hot plates, wax knife heaters, matrix driers, driers of all kinds, room heaters, hot air blowers, bacteriological incubators, palette ovens, and laboratory furnaces are but a few of the tried-and-found-successful applications of "white coal." Still, the surface has been barely scratched; there is far more promise in the future of electric heating than in the present.

RECLAIMING WASTE MOLDING SAND.

An ingenious method of reclaiming waste molding sand has recently been introduced in an American foundry, which, at the same time, serves as a means of loading the large accumulation of foundry sand into a gondola car. The equipment consists of a combination of two portable belt conveyors, and a magnetic separator which is employed to remove the ferrous metal from the waste molding sand. In operation the refuse is shovelled into the shorter conveyor and passes over a magnetic pulley having the magnetic coils on the inside of the pulley. The metal, as it passes over the pulley, adheres to the belt, while the sand is discharged upon the second conveyor, from which it is dumped into the car. Meanwhile the metal is carried partly around the magnetic pulley and is dumped into a chute at the point where the belt leaves the pulley. The equipment, it is reported, has a capacity of a ton per minute.—*Scientific American*.



Correct and Incorrect Method of Lighting Lathe with Operative

INDUSTRIAL ILLUMINATION

ITS EFFECT ON OUTPUT AND GENERAL WELFARE

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EVERY manufacturing concern is primarily interested in increasing its output; the greater the production for a given plant, the larger are the returns on the money invested.

Striving for increased efficiency, the overhauling of industrial methods and the closer analyses of conditions have become necessary in the attempt to reduce wastefulness and provide new ideals for future work, and in this article it is proposed to bring before the employer the question of illumination as a field for thought, because heretofore the amount of serious consideration given to the effect of illumination on output has been exceedingly small.

Within the last few years developments have taken place in the sources of gas and electric light which have made possibilities attainable that, with the old methods, were unthought of or impossible. The improvements in the means for illumination are truly remarkable, and the illuminants available ten years ago now play a small part in present approved methods of industrial lighting, and with the large range of lamps now on the market, in units of various sizes adaptable to different locations and classes of work, the illumination of working spaces can, as a rule, be greatly improved.

Some of the advantages to be obtained from improved lighting are—the reduction of accidents, greater accuracy in workmanship and consequent reduction of spoilage, increased production for the same labor cost, reduced eye strain, the promotion of better working and living conditions, increased power of supervision, and more order and neatness.

A Preventative of Accidents.

The prevention of accidents has, as a primary requisite, good illumination. During the winter months of diminished light, accidents are more frequent than in the summer months, when daylight is of longer duration. It is safe to say, and this is confirmed by many authorities, that at least twenty-five per cent. of industrial accidents are distinctly attributable to bad light. Good lighting is, therefore, a safeguard against

accidents, and from this point of view alone is a profitable investment.

Accuracy of workmanship is particularly affected by the amount of light that a workman has to work by, and bad lighting is responsible for a considerable amount of spoilage. To do accurate work quickly there must be a sufficient amount of well-placed light to detect imperfections in workmanship and material, and to read gauges or scales easily.

Good Lighting and Efficiency.

The effect of illumination on output is not one easy to detect, and requires close study and investigation. Those who have made a study of it in various industries have found that the reduction in output, due to poor lighting, is as much as twenty per cent. below that produced under good daylight conditions. When we analyze this further, and find that the average plant, working on a day schedule only, operates about four hundred and fifty to five hundred hours in each year, or fifteen per cent. of its time under artificial light, and assuming that the reduction in efficiency is only ten per cent. below that under daylight, the total loss of output for the year due to lighting amounts to about one and one-half per cent., or, in other words, the plant is in operation five days in each year without any output. It may be pointed out that this condition is a conservative one, as the average reduction of output in plants that have been investigated is in the neighborhood of two per cent. When applied to the condition of a plant operating on a day and night schedule, with over fifty per cent. of its time under artificial light, the effect that the lighting has on the output is very considerable. With a good lighting system the output should be as high when working by artificial light as by daylight.

One of the greatest losses due to a poor lighting system is the necessity of carrying the work or the tool to a place where the light is good. This also applies to where an operator must move a light in order to enable him to see his work

better. Again, a source of loss is the time taken up in looking for tools and materials that have fallen or been left in dark corners. Unnecessary motion is a dead loss, and means a corresponding loss in output.

Working where it is difficult to see causes eye strain. This may be due to insufficient light, or by glare caused by light shining directly, or reflected from a shiny surface, into the workman's eyes. Eye strain causes headache and consequent disinclination to work, or, in other words, inefficiency. Insufficient or bad illumination finally causes permanent injury to the eyesight and general health, and consequently incapacitates the workmen at a time when, due to their long training, they should be giving the largest returns.

Manufacturers who have come to realize the value of the promotion of better working and living conditions, and of conserving the human equipment, are giving more thought to the causes affecting the workman's efficiency and that are detrimental to his general welfare. Many employers have lagged behind in the general advance. This applies in particular to old factories, designed before the importance of illumination was generally recognized, and to small workshops, on which the proprietors hesitate to expend the capital necessary for the improvement, even though the cost per day of operation of a proper lighting system in actual money is equivalent to the wages for two or three minutes only.

A well-lighted shop is a clean one because there are no dark spaces where the careless or lazy workman can leave obstructions or refuse, thereby increasing the accident and fire risk.

From the point of view of supervision, light is a very important factor, as the range of vision of those in charge is much increased where the lighting is good.

After considering the effects of good and bad illumination, the question naturally arises as to what are the requisites of good illumination and how can they be obtained?

In the first place, sufficient illumination should be provided



Scheme of Localized General Illumination

for each employee, irrespective of his position on the floor. Lamps should be selected and installed so as to avoid eye strain. This can be best done by mounting the lamps sufficiently high, and so placing and equipping them with suitable reflectors to properly distribute the light and prevent the direct rays of the lamp striking or being reflected into the eye.

Lamps should be distributed so as to cause a uniformity of illumination and reduce sharp, heavy shadows to a minimum. Heavy contrasts should be avoided, because an increase in contrast reduces the sensibility of the eye and causes it to become quickly tired, due to continually adapting itself to the different intensities of light. The effect of contrast is particularly well illustrated in the case of an automobile headlight. In the daytime it can be looked into without discomfort, but at night it is dazzling, due to contrast with the surroundings. The bare lamp on a drop cord causes the same effect to a less degree, and represents a distinct loss of time to the employee where it is used, due to time taken to readjust the eyes to the surroundings after glancing in its direction. The eye soon tires under this continuous readjustment and becomes strained.

In some cases individual lamps, placed close to the work, may be necessary, but as a rule they can be dispensed with if the general system of illumination is properly designed. In any event individual lamps should be provided with suitable opaque reflectors, and only be used to reinforce the illumination provided by the overhead lamps. Individual lamps, used without any system of general illumination, are bad, as they cause heavy contrasts and deep shadows, conditions to be particularly avoided if eye strain and efficiency are to be considered.

The type and size of overhead lamps chosen should be adapted to the particular ceiling height and work in question, and they also should be fitted with suitable reflectors that will give the proper distribution of light without injurious effect on the eyes of the employees. Locations with low ceilings have,



Shop lighted by 100 Watt Lamps equipped with Holophane Reflectors

until recently, frequently been lighted by individual carbon lamps, which are of low brilliancy compared with the new types of tungsten lamps, and one of the greatest abuses in the use of the new lamps has been their substitution for the carbon lamps without change in the method of use. The result is excessively brilliant spots in the line of vision, and increased contrast. Although there is actually more light, the workman can see no better, probably less, especially after he has been working for a short time. The outcome is that he asks for a larger lamp, which, if he gets it, aggravates the condition instead of improving it.

In improving the lighting the color of the ceilings and walls should not be overlooked. The ceilings and upper part of the walls should be of a light color with a dull finish, to diffuse and reflect the light striking them, thereby increasing the efficiency of both natural and artificial lighting. The lower portion of the walls may be of a darker shade, to avoid monotony and give a restful effect on the eyes.

The correct choice of a proper type of installation to best meet one's needs, on account of the wide range of illuminants, is a difficult one, and technical training is necessary. Proper

consideration of the color and quality of the light has a great bearing on the choice of the successful system. For instance, a type of installation that will produce the best results in a drafting room, where an absence of shadows is an advantage, may be unsatisfactory when applied to die-making and certain fitting operations, where a certain amount of shadow contrast on the work is necessary to bring the different parts into prominence.

The solution of lighting problems has brought into being a new field of engineering called illuminating engineering, and the importance of this branch is manifest in the formation, in the United States, of the Illuminating Engineering Society, for the purpose of an interchange of ideas on the subject of lighting. This society is growing rapidly, and is being looked to for advice by legislative bodies requiring assistance in the formation of codes to govern illuminating in industrial establishment compulsory to supply adequate illumination, and the movement is steadily growing, along with "Safety First" and lishments. Several States have already passed laws making conservation movements.

PRAIRIE PROVINCES BRANCH

Month of January an Active One—Meetings held in Winnipeg, Regina and Saskatoon—
Legislation being Carefully Watched

By G. E. CARPENTER
Assistant Secretary, Winnipeg

DURING the month of January one meeting each of the Executive and Membership Committees was held and the Legislative Committee met on several occasions. In order that representatives of western sections of the Branch may know in advance the dates of regular meetings of the Executive Committee, so that they may arrange to attend or submit matters thereto, it has been decided to hold these meetings upon the third Thursday in each month.

A general meeting of the members of the Branch was held in the Royal Alexandra Hotel on Tuesday, January 30th, when Mr. T. R. Deacon, President of the Manitoba Bridge and Iron Works, and a former Chairman of the Branch, was a guest of the Association at luncheon, and delivered an excellent address upon the necessity of developing the natural resources of Canada after the war, and the utilization thereof of returned soldiers and persons now engaged in munition work.

New Members.

The following applications for membership in the Branch were received during the month and approved by the Membership Committee:

A. E. Karges, representing The James Stewart Mfg. Co., Ltd., Winnipeg; S. Edwards, The Modern Laundry & Dye Works Co., Ltd., Winnipeg; A. G. Laing, Laing Bros., Ltd., Winnipeg; H. Vermilyea, F. J. Welwood & Co., Ltd., Winnipeg; T. A. Drummond, Sawyer-Massey Co.; W. R. McKenzie, Dominion Fire Brick and Clay Products Co., Regina; C. B. Soringstein, The Regina Foundry Limited, Regina; A. D. Brown, Tudhope-Anderson Company, Ltd., Regina; C. W. Northcott, Goold, Shapley & Muir Co., Ltd., Regina; B. C. McMillan, Tuckett Limited, Regina; T. G. McNall, George Weston, Ltd., Regina; R. L. Delahay, The National Mfg. Co., Ltd., Regina; George W. McFarland, Williams Shoe, Limited, Regina; E. M. Little, Gutta Percha & Rubber, Limited.

Regina Section.

A well attended meeting of the Regina Section of the Branch was held at that point on January 9th, the Chairman of the Branch, Mr. W. R. Ingram, and the Secretary being present. At this meeting the following additional officers of the Section were appointed: Vice-Chairman, Chas. Watson; Recording Secretary, G. W. McFarland, and standing committees were elected with the following Chairmen: Membership, Geo. H. Anderson; Transportation, W. R. Harris; Insurance, D. S. Cunningham; Legislative, T. A. Drummond. This evidence that Regina intends to have a good live Section is confirmed by the new applications mentioned above, and the fact that the membership in the Section now totals 25.

Saskatoon Section.

The Chairman and Secretary of the Branch had the pleasure of meeting with members of the Saskatoon Section on January 12th, when Mr. F. W. Beatty was elected Vice-Chairman. It is expected to materially increase the membership at that point in the near future and place the Section upon a strong basis.

Workmen's Compensation, Saskatchewan.

In the Speech from the Throne, the Lieutenant-Governor of Saskatchewan forecasted some amendment to the Workmen's Compensation Act in that Province. The Chairman of the various Sections of the Branch in Saskatchewan are taking steps to secure copies of any bill submitted in order that any legislation which appears to be detrimental to the interests of their members may be reviewed and, if necessary, suitable representations made to the Government to protect manufacturers in Saskatchewan. In this connection the experience of this Branch obtained in negotiating with the Trades and

Labor Council and drafting the present satisfactory Act in Manitoba will be available to members in Saskatchewan.

Workmen's Compensation, Manitoba.

The Trades and Labor Council have applied to the Provincial Government for the appointment of two additional Commissioners, making three in all, to administer the Workmen's Compensation Act, and also for an extension of the Act to cover workmen practically from the time they leave their homes for work until they return thereto. A special committee of this Branch secured an appointment with the Ministers of the Government and vigorously opposed any such amendments. The committee feel there is no likelihood of either of these being enacted, at least at this session of the Legislature.

The matters of the inclusion of the office staff and officers of the Company, subject to the risk of the industry, in the pay-roll upon which premium has to be paid, and placing of some industries under the jurisdiction of the Act while their competitors are relieved therefrom, have been taken up with the Commissioner of the Board, and are being dealt with further by a special committee, which will no doubt report during the coming month.

Minimum Wage Bill.

The passage of a minimum wage bill was opposed on the grounds that the employee and the employer should be left entirely free to make any arrangement satisfactory to both. It was also pointed out that under present conditions when there was such a shortage of labor that employers had frequently to engage help for short hours, or for any period it could be obtained, and that it would be unfair to enforce a minimum wage bill under these circumstances, which would restrict the full use of such help as is now available in this way.

Canned Salmon Rates.

Railways proposed to increase rates from British Columbia coast points to distributing centres in Western Canada from 70c. minimum 70,000 lbs.; 72½c. minimum 60,000 lbs., and 85c. minimum 40,000 lbs., to 90c. per 60,000 lbs. per car on September 15th, 1916. The effective date of this advance was postponed to December 31st and later to March 1st. Tariffs have now been issued naming following rates: 80c. minimum 70,000 lbs.; 82½c. minimum 60,000, and 95c. minimum 40,000 lbs.

Fire Insurance.

Fire losses are adjusted upon the amount required to replace the property in the same condition as existed before the fire. With the increased cost of building and the advance in the price of machinery it is possible that in case of loss by fire, on account of the co-insurance clause in some policies, members might suffer severe loss, and the advisability of increasing insurance to correspond with increased value of plant is brought to the attention of members. Probably the Insurance Department of the Association could be of assistance to you in this connection.

Shed Storage Charges.

Effective January 1st, railways serving Western Canada amended their tariffs providing shed storage charges.

"On goods in bond, storage charges will begin to accrue at the expiration of six days from the first 7 a.m. after written notice of arrival has been sent or given."

This is an extension of three days free time on bonded freight, previous tariff allowing only 72 hours free time.

Proposed Classification, No. 17.

No further action has been taken on this matter, for the reason that the railways have not filed the explanation of the effect of the proposed classification on traffic in Eastern and Western Canada requested by the Railway Commission.

Oleomargarine.

At a general meeting of the Executive and Legislative Committees of this Branch the following resolution was passed and forwarded to Head Office for action, it being a matter of Dominion Legislation:

"That the Dominion Government be petitioned to repeal regulations prohibiting the importation of oleomargarine, subject to its inspection for purity the same as other food products, and that no duty should be placed upon importations of oleomargarine."

ITS ASSETS INCREASED.

Eighteen and a Half Millions of Dollars Added by the Union Bank of Canada in a Single Year.

While the public is accustomed to expect a fairly substantial growth in the deposit business of any Canadian bank at the present time, it is still capable of being surprised at such an exhibit of swift and all-round growth as is presented by the Union Bank of Canada in its annual statement for the year ending November 30th, 1916.

The 1916 figures, remarkable in themselves, are the more so when they are considered as following those of a year which was itself one of very substantial and steady growth. The assets of this bank are now in excess of \$109,000,000; in 1915 they were \$90,663,000; in 1914 they were \$81,561,850; a growth of over 20 per cent. in one year and of more than 33 per cent. in the two years together.

For the year 1916 alone the non-interest-bearing deposits show a growth of more than eight millions, the interest-bearing deposits of nine and a half millions, and the note circulation of more than a million.

The assets of the bank are very largely in the form of cash and liquid securities, the demands for commercial accommodation being still moderate and many business firms having reduced or retired their banking indebtedness during the year out of their cash profits.

Owing to this strength in liquid assets (which amount to about 56½ millions against a round hundred millions of public liabilities) the bank is enabled to render important services to the Canadian and Imperial Governments in the financing of the munition business. Its holdings under the heading of Canadian municipal securities and British, foreign and colonial public securities, other than Canadian, amount to \$14,445,700; against only \$395,350 a year ago, and it is understood that the increase is almost entirely due to British Treasury issues in connection with war orders. The bank has also much increased its holdings of Dominion bonds.

Montreal is to have an addition to the numerous brick and terra cotta companies that are already operating there. The new one is Mack Brick Co., Limited, and they are authorized to employ \$500,000.

Many of our old friends are departing from their long-habituated custom of operating under a firm or individual name, and are taking out letters of incorporation, tacking the formal "limited" to the end of their name. The latest convert is William Scully, of Montreal, who will henceforth appear in business as William Scully, Limited.

T A R I F F

By J. R. K. BRISTOL

To Manufacturers Who Contemplate Engaging in Export Business

Are you aware that you have the privilege of practically duty free materials for manufacturing for export? Full information on this matter can be obtained from the Customs Department, Ottawa; or from the Manager, The Tariff Department, Canadian Manufacturers Association, Toronto.

FREE IMPORTATION GRANTED.

Several Articles Used in Manufacturing are Admitted Duty Free by Order-in-Council.

The following articles used as materials in Canadian manufactures have been transferred to the list of goods which may be imported into Canada free of duty, by Order in Council in effect January 19, 1917, viz.:—

(a) Rolled iron or steel hoop, band, scroll or strip, number fourteen gauge and thinner, and rolled iron or steel sheet, when imported by manufacturers for use only in their own factories in the manufacture of galvanized iron or steel hoop, band, scroll, strip or sheet.

(b) Corkwood, or cork bark, unmanufactured, when imported by manufacturers for use only in their own factories in the manufacture of corks, strips, shives, shells and washers of cork.

(c) Materials imported by manufacturers for use only in their own factories in the manufacture of artificial limbs.

The same Order in Council establishes the following rates of duty on materials as described when for use in Canadian manufactures, viz.:—

Battery jars of glass and articles of hard rubber when imported by manufacturers for use only in their own factories in the manufacture of electric storage batteries:—

Under the British Preferential Tariff	.....	12½%	ad valorem.
Under the Intermediate Tariff	.....	20 %	“ “
Under the General Tariff	.....	20 %	“ “

By Order in Council dated the 17th January, 1917, authority is granted for the free admission of Passover bread and Matzo when imported and entered at the Customs House before the 1st of March, 1917, and the 6th April, 1917, inclusive, for use during the Passover season.

IMPORTED GOODS OF ENEMY ORIGIN.

Power Granted by Governmental Order to Seize all Such and in Certain Specified Cases to Forfeit Them.

The term “Goods of Enemy Origin” is declared in a Governmental order, dated 10th day of January, 1917, to mean goods which have been exported from an enemy country subsequent to the outbreak of war with such country, and also goods which, though exported from an enemy country prior to the outbreak of war, remained the property of an enemy after such date. The new order provides:—

“Where the Minister of Customs has reason to suspect that the country or origin of any goods imported into Canada is an enemy country within the meaning of the various proclamations relating to trading with the enemy, the goods may be seized, and unless the contrary be proved, the country or origin of such goods shall be deemed to be such an enemy country.

“And any goods so seized, whose origin is not proven, to the satisfaction of the Minister of Customs, to be other than that of an enemy country, shall become forfeited to the Crown and shall be destroyed or otherwise dealt with as the Minister of Customs directs.”

The power under this order to seize imported goods suspected to be of enemy origin extends to any goods which the Minister of Customs has reason to suspect of being imported in contravention of the law relating to trading with the enemy. It also applies to all goods which are at present under Customs detention as being of suspected enemy origin.

PROHIBITED EXPORTS.

Persons Exporting Goods Contrary to any Prohibitory Order Liable to Penalties.

The Customs Department, Ottawa, under date January 8th, 1917, issued the following notice to Collectors of Customs and others concerned:—

“If any goods, the exportation of which to any country or place is prohibited by Orders in Council sanctioned under authority of the War Measures Act now in force, or which may hereafter be enacted, are exported or are brought to any quay, wharf, or other place, or are delivered to any person or carrier, or are carried coastwise or by inland navigation, or waterborne, or are laden in any railway carriage or other vehicle for the purpose of being exported or shipped for exportation contrary to the provisions of any such Orders in Council or any Regulations made thereunder, the exporter or his agent or the shipper of any such goods shall be liable, on summary conviction, to a fine not exceeding one thousand dollars, or to imprisonment with or without hard labor for a term not exceeding two years or to both fine and imprisonment.”

MAINTENANCE AND CONTROL OF SUPPLIES.

Special Measures Adopted for Maintaining the Supply, including Prevention of Waste, in the United Kingdom of any Article of Commerce the Maintenance of Which is Important.

These new measures are designed to effectively control copper, wire and cable containing copper, bessemer and open hearth steel, corrugated sheets, tin plates, terne plates, black plates, lead coated sheets and other products. The United Kingdom regulations by which such control is effected, follow:—

CONTROL OF STEEL SUPPLIES.

The Minister of Munitions in exercise of the powers conferred upon him by the Defence of the Realm (Consolidation) Act, 1914, the Defence of the Realm (Amendment) No. 2 Act, 1915, the Defence of the Realm (Consolidation) Regulations, 1914, the Munitions of War Acts, 1915 and 1916, and all other powers thereunto, enabling him hereby orders that all persons engaged in the manufacture, purchase, sale or other dealings in steel shall comply with the following regulations:—

1. No order for steel made by the Open Hearth or Bessemer Process (other than Shell Discard Quality) shall be accepted for manufacture and no such steel shall be manufactured unless the purpose for which the steel is required has been approved. Such approval must be evidenced by one or

other of the following, which must be quoted by the ordering firm together with the purpose:—

- (a) Admiralty contract reference and number, or Admiralty Priority Section permit reference and number.
- (b) War Office contract reference and number.
- (c) Marine Department, Board of Trade, permit reference and number.
- (d) Ministry of Munitions contract reference and number.
- (e) Commission Internationale de Ravitaillement or Commission Francaise sanction reference and number, with Ministry of Munitions Priority Classification.
- (f) Ministry of Munitions permit reference and number and Priority Classification.

This sub-heading (f) covers all home orders that do not originate in a principal contract under (a) to (d) above.

2. Full and accurate returns shall be made weekly to the Director of Steel Production, Ministry of Munitions, Whitehall Place, London, S. W., in the form provided by him, showing particulars of all steel manufactured and delivered.

3. Orders received as above shall be executed in the following order of priority:—

Admiralty.	Priority 5.
Priority 1.	Class B.
Priority 2.	Priority 6.
Priority 3.	Class C.
Priority 4 (or Class A).	

4. All orders under (b) to (d) of Clause 1, inclusive, shall rank automatically as Class A or Priority 4 (war work). If a higher grade of priority is required, application must be made to the Priority Branch of the Ministry of Munitions, stating grounds of special urgency.

5. Orders for steel for guns, mortars, gun mountings, gun carriages, and parts thereof, shall be executed as in Priority 1 (most urgent war work), and the execution of orders for steel for shell or other purposes must not interfere with or delay the above-mentioned orders. These orders shall be entered in column Priority 1 of the return.

6. Subject to Clause 5, shell steel itself, steel for shell parts, and steel for bombs and grenades for the Trench Warfare Department, shall be manufactured and supplied in the fixed quantities prescribed irrespective of the Priority Regulations.

Particulars of all steel rolled for shell or shell parts shall be entered in the shell steel columns of the return, and particulars of all steel for bombs and grenades shall be entered in column Priority 1 of the return and marked "T. W. D."

7. No steel, other than Shell Discard quality, shall be manufactured for any order below Class B.

8. Notwithstanding the above the Director of Steel Production shall have full power to direct that any specification shall be given such order of priority of execution as he in his discretion may deem necessary.

WORKS.

9. Under these regulations all orders which carry the necessary particulars under Clause 1 may be accepted without reference to the Ministry of Munitions. Only specifications carrying a Priority classification Class B or higher may be rolled at present, except those in Shell Discard quality, which may be rolled for all classes.

10. No special form of certificate to accompany an order is required, but the following particulars must accompany all orders:—

Government Contract Reference and No., and Purpose, or Ministry of Munitions Permit Reference and No., with Priority Classification and Purpose, and a declaration that the

whole of the material specified is required for the purpose covered by the said References and Classification.

11. Steel in Shell Discard Quality for Home Consumption Orders may be accepted for manufacture without the usual Government Contract Reference and Number, or Ministry of Munitions Permit Reference and Number and Priority Classification, but the purpose must be ascertained in all cases and entered in the return or the order refused.

12. Steel in Shell Discard Quality for Export.—Orders may be executed in Class A, B or C, provided that permission to manufacture has been granted by the Ministry of Munitions and that the following particulars are given with the orders, viz.:—

Ministry of Munitions Permit Reference and Number,
Priority Classification,
Purpose,
Country of destination,

together with a declaration that the whole of the material specified is required for the purpose given.

13. Contract or permit numbers need not be insisted upon in the case of Admiralty instructions for immediate repairs to ships.

MERCHANTS.

14. For direct orders, merchants must pass on to the works the Government Contract Reference and Number and Purpose or the Ministry of Munitions Permit Reference and Number, Priority Classification and Purpose, which they must obtain from the ordering firm, and that number and classification will give the order its proper place for execution.

STOCK-HOLDERS.

15. Stock-holders in accepting and executing orders for steel shall be subject to the same regulations as to approval, priority and otherwise as are applicable to manufacturers accepting and executing orders for manufacture, and must not execute orders below Class B, except in Shell Discard quality.

16. Stock-holders may apply for a permit reference and number to be used when sending orders to the works for replenishing their stocks. The following particulars must be sent with the applications:—

- (a) Normal stock of steel.
- (b) Stock of steel it is desired to hold at present time.
- (c) Average call on stock of steel per month.

EXPORT.

17. The Minister's requirements as to export are contained in a special circular, which may be obtained on application.

INTERPRETATION.

18. For the purpose of this order the term "Manufacture" shall include casting, rolling or re-rolling, forging and pressing, and the term "steel" shall include all forms of open hearth or Bessemer steel, made in this country or imported, whether new, second-hand, defective, or scrap for re-rolling.

BRASS AND COPPER MANUFACTURERS.

Particulars to be Furnished by Manufacturers in Great Britain to the Minister of Munitions.

In pursuance of the powers conferred upon him by Regulation 15 C of the Defence of the Realm (Consolidation) Regulations, 1914, the Minister of Munitions has ordered that every person engaged in the production of brass rod, tubing, sheet and wire strip, stampings, castings, billets and ingots; and copper rod and wire, tubing, sheets, plates, discs and ingots,

shall furnish to the Director of Materials particulars of his output in such form and at such times as will from time to time be notified to him by the Director of Materials. The Minister of Munitions has further ordered that any particulars so furnished should be verified by the signature of the person required to furnish the same, or where such person is a firm or company, by the signature of a partner, director or other responsible officer—*Board of Trade Journal*, Dec. 7.

SPECIAL INSTRUCTIONS.

Notice in Regard to the Export of Copper Wire and Cable Containing Copper, Bessemer and Open Hearth Steel, or Corrugated Sheets, Tinplates, Terneplates, Blackplates, Tinned Sheets and Lead-Coated Sheets.

1. With a view to conserving supplies of copper wire or cable, Bessemer and open hearth steel, corrugated sheets, tinplates, terneplates, blackplates, tinned sheets and lead-coated sheets, the Director of the War Trade Department announces that it has been arranged with the Ministry of Munitions that export licenses will not be granted unless a Ministry of Munitions priority certificate (Class "A" or Class "B") permitting manufacture or sale form stock has been obtained, or unless the reference and number of an Admiralty contract or permit or War Office contract for the completion of which the copper wire or cable, steel, tinplates, etc., are required, can be quoted. Export licenses will not, as a general rule, be issued in respect of copper wire or cable, steel, tinplates, etc., for which a Class "C" certificate is quoted.

2. In the case of allied countries (France, Russia, Italy, Serbia, Portugal, Roumania, Belgium, Japan) priority certificates are only given in very exceptional cases by the Ministry of Munitions, unless the application is supported by the Commission Internationale de Ravitaillement, whether the consignment is intended for a Government contract or not. Application should, therefore, be made direct to the Commission Internationale de Ravitaillement, India House, Kingsway, London, W.C., which, if prepared to support the case, will communicate with the Ministry of Munitions, and arrange for the issue of a priority certificate. If the copper wire or cable, steel, tinplates, etc., are for Government work and export is allowed, the permits for export will be issued by the Commission Internationale de Ravitaillement. If the goods are not for Government work and the applicant is in a position to quote a priority certificate ("A" or "B") or contract reference and number, he should make an application to the War Trade Department for the grant of an export license, and if the export is allowed a license will be granted by that Department.

3. In the case of Sweden, Norway, Denmark, Holland and Switzerland, application should be made in the first instance to the War Trade Department, which if there is no immediate reason for refusal, will arrange direct with the Ministry of Munitions for the issue of a priority certificate. The applicant should not communicate direct with the Ministry of Munitions, and the priority certificate will be forwarded to the applicant by the War Trade Department with the export license. This exception does not apply to Bessemer and open hearth steel, nor to corrugated sheets.

4. In the case of all other destinations, including British Possessions, application for a priority certificate should be made direct to the Ministry of Munitions, Priority Branch, 28 Northumberland Avenue, W.C. No application for an export license can be considered by the War Trade Department unless the number of a Ministry of Munitions priority certificate under Class "A" or "B" (or alternatively an Admiralty or War Office contract number) is quoted.

5. A priority certificate is required, even though the goods are already manufactured, and even though the goods are merely to be transferred from one branch of a firm in the United Kingdom to another branch of the same firm in a foreign country or British Possession.

6. Applicants are warned that the issue of a priority certificate by the Ministry of Munitions is not a guarantee that an export license will be issued by the War Trade Department.

7. If exporters have any doubt as to the reliability of the proposed consignee, they are recommended, before proceeding to manufacture, to consult the War Trade Intelligence Department, Broadway House, Tothill Street, S.W. (as regards foreign countries in Europe), and the Foreign Trade Department, Lancaster House, The Mall, S.W. (as regards foreign countries outside Europe).

AGRICULTURAL MACHINERY AND IMPLEMENTS.

Control of Manufacture.

The Minister of Munitions announces that an Agricultural Machinery Branch has been set up in conjunction with the Board of Agriculture and the Food Controller to deal with the control of the manufacture of agricultural machinery and implements.

It is intended to class the manufacture of all such machinery and implements as munitions work.

Mr. S. F. Edge has lent his services to the Ministry of Munitions as Director of this branch, and Mr. E. Guy Ridpath is Deputy-Director.

AGRICULTURAL AND DAIRY MACHINERY, VEHICLES, ETC.

Restriction on Manufacture or Erection.

The Minister of Munitions has prohibited as from 10th January, until further notice, any person from carrying out, except under and in accordance with the terms of a permit issued under the authority of the Minister of Munitions, any work consisting in the manufacture or erection of any machine, implement, vehicle or other article or any part thereof designed or adapted or commonly used for agricultural or dairy purposes, provided that this Order shall not prevent the completion of any work remaining to be done under a contract in writing entered into before the above-mentioned date upon any article of the nature aforesaid intended for use in this country or the carrying out of any necessary repairs.

All applications with regard to this Order should be addressed to the Director, Agricultural Machinery Branch, Armament Buildings, Whitehall Place, London, S. W.

MAGNESITE AND MAGNESITE PRODUCTS.

Restrictions on Use.

The Minister of Munitions has prohibited, as from 10th January, the use of magnesite and magnesite products for or in connection with (a) the construction or repair of any building (other than a furnace) or any flooring or deck, or (b) the manufacture of any insulating or non-conducting material, except under and in accordance with the terms of a permit granted by the Minister of Munitions.

All applications in reference to this Order should be addressed to the Director of Steel Production (W. J. J. 342) Armament Buildings, Whitehall Place, London S. W.

GAS WORKS RETORT CARBON.

The Minister of Munitions has ordered that no person shall, as from 11th January, until further notice, purchase or take delivery of any gas works retort carbon except under and in accordance with the terms of a permit issued under the authority of the Minister of Munitions; and, further, that no

person shall, as from the date mentioned, until further notice, sell, supply, or deliver any gas works retort carbon to any person other than the holder of such a permit.

All applications for a permit in connection with this Order should be addressed to the Director of Materials (A. M. 2 F. W. F.), Armament Buildings, Whitehall Place, London, S.W.

TRADING IN WAR MATERIAL.

In pursuance of the powers conferred on him by Regulation 30A of the Defence of the Realm (Consolidation) Regulations, 1914, the Minister of Munitions has ordered, under date 2nd November, that the war material to which the Regulation applies shall include war material of the following classes and descriptions, namely:—

Aluminium and alloys of aluminium, unwrought and partly wrought, including ingots, notched bars, slabs, billets, bars, rods, tubes, wire, strand, cable, plates, sheets, circles, strip.

Aluminium scrap and swarf, aluminium alloy scrap and swarf, remelted aluminium scrap and remelted aluminium alloy scrap and swarf.

Granulated aluminium, aluminium powder, "bronze," "flake," and "flitter."

The Order, dated 21st July, 1916, a notice respecting which was published on p. 232 of the *Board of Trade Journal* of 27th July, relating to aluminium and alloys of aluminium therein mentioned, is cancelled.—*Board of Trade Journal*, Dec. 7, 1916.

IMPORT PROHIBITION ON MOTOR VEHICLES IN BRITISH INDIA.

The Government of India has prohibited the importation into British India of automobiles (including commercial vehicles), chassis, motorcycles, and all parts and accessories therefor other than tires, whether of British manufacture or not. The only exceptions to the prohibition, which went into effect December 23, 1916, are articles imported by the Government or under license. Licenses will be issued by collectors of customs at ports of entry and, in general, will be granted only in the case of goods proved to have been paid for before December 23, or shipped before January 1, 1917. Licenses may be granted for the importation of parts shipped or paid for later, provided the importer can show that the articles are being imported merely for the purpose of repairs. Vehicles for the Red Cross will be admitted under license, even though not consigned to the Government.

All applications for licenses or requests for rulings in particular cases, as well as inquiries regarding the detailed administration of the regulations, should be addressed to the collectors of Customs at the respective ports through which it is desired to import articles subject to the prohibition.—*Board of Trade Journal*, January 4.

NEW ZEALAND'S INCREASE IN IMPORTS.

(*New Zealand Trade Review and Price Current*.)

The imports into New Zealand for the 11 months ended November 30, 1916, were 23 per cent. greater in value than those for the corresponding period of 1915. The largest share of the increase was in the soft-goods section, notably in cotton, silk and woollen piece goods, apparel, hosiery and carpets. Probably a large proportion of the growth is due to high prices.

With several lines of metal goods the weights are available, and these show that the increase is very largely a price one; bar iron shows 22½ per cent. increase in weight, but

65½ per cent. increase in value; fencing wire is only 6 per cent. more in weight, but 50 per cent. more in value; corrugated iron shows 39 per cent. decrease in quantity but only 21 per cent. decrease in value. Foodstuffs show a decrease on account of the heavy falling off in imports of wheat, flour and sugar.

Beverages show a fairly heavy growth, practically all in spirits, as beer, tea, coffee and cocoa show decreases. With whiskey the increase is due half to higher cost and half to increase in quantity. Several items of the miscellaneous class have had a heavy growth, notably motor cars and cycles, as well as benzene, books, china and glassware, leather and manufactures, paints, paper, stationery, tobacco and cigarettes. The number of motor vehicles imported in 1916 was 5,946, compared with 3,365 in 1915, and 3,331 in 1914.

VALUE OF CERTAIN IMPORTS.

The total import figures for the respective periods of 11 months in the successive years were: In 1914, £20,020,346 (\$97,429,104); in 1915, £19,757,312 (\$96,148,959); in 1916, £24,371,746 (\$118,605,102). The amounts for the principal articles in 1914, 1915 and 1916, in pounds (£=\$4.8665) were:

Articles.	1914.	1915.	1916.
Apparel	£1,111,837	£842,979	£1,107,704
Boots and shoes	352,248	305,398	358,195
Cotton piece goods	834,555	979,450	1,576,795
Hosiery	191,099	186,369	335,127
Woollen piece goods	349,339	303,422	767,392
Hardware	337,895	246,292	350,759
Iron	839,946	798,117	856,547
Electrical machinery	369,691	296,350	433,846
Sugar	487,306	1,038,583	837,606
Whiskey	264,620	247,969	482,337
Tea	392,599	430,085	367,929
Coal	513,366	332,753	188,525
Fertilizers	478,556	443,685	322,280
Motor vehicles	710,812	561,678	777,447
Benzene	405,317	384,416	536,054
Tobacco	323,809	298,380	355,128
Timber	336,519	261,713	136,580
Specie	662,220	974,114	1,224,980

- Note:*—1. The New Zealand Customs tariff classifies Canadian products as a rule at about one-third less duty than corresponding goods of foreign production.
2. By a Customs drawback arrangement Canadian manufacturers enjoy the equivalent of practically duty free materials for manufacturing for export.

NEW INCORPORATIONS.

Montreal capitalists have had their eyes open to the big opportunities for manufacturing chemicals and dyestuffs, and for mining and refining various minerals and earths used for industrial purposes. A charter has recently been granted Industrial Chemicals, Limited, Montreal, authorizing them to use \$2,750,000 in developing the lines above mentioned.

Some Ottawa and Winnipeg people are looking into the future of Manitoba as a lumbering and paper producing province. The Lake Winnipeg Paper Co., Limited, head office at Ottawa, is an evidence of the faith of a number of well-known lumbermen. This company is empowered to use \$5,000,000 in the development of their business.

It is pleasing to note that the old Doherty Piano firm, of Clinton, Ont., is not going to be allowed to disappear entirely from business circles. A new charter has been taken out by some London capitalists and manufacturers, who perpetuate the name under Doherty Pianos, Limited, and are authorized to use \$200,000 in making a success of this old-established business.

FOREIGN TRADE OF CANADA.

(Comparison 1914, 1915, 1916.)

IMPORTATIONS.

	Month of December.			Nine Months Ending December.		
	1914.	1915.	1916.	1914.	1915.	1916.
Dutiable goods	\$17,482,008	\$24,805,899	\$38,177,116	\$215,825,567	\$197,950,486	\$330,791,068
Free goods	12,910,905	20,884,822	29,837,451	132,921,353	145,972,837	272,075,885
Total	\$30,392,913	\$45,690,721	\$68,014,567	\$348,746,920	\$343,923,323	\$602,866,953
Coin and bullion	1,061,970	9,429,288	611,512	130,619,107	19,902,003	22,994,423
Grand total	\$31,454,883	\$55,120,009	\$68,626,079	\$479,366,027	\$363,825,326	\$625,861,376
Duty collected	\$4,953,048	\$9,242,125	\$12,085,082	\$58,581,066	\$71,305,304	\$106,378,729

EXPORTATIONS.

(For December.)

	—1914—		—1915—		—1916—	
	Domestic.	Foreign.	Domestic.	Foreign.	Domestic.	Foreign.
The Mine	\$3,791,299	\$90,540	\$5,632,984	\$207,652	\$8,457,039	\$42,446
The Fisheries	2,136,581	11,616	2,067,132	8,429	2,630,149	106,449
The Forest	2,698,804	400	3,553,083	2,764	4,262,423	9,409
Animals and their Produce	8,301,667	364,036	9,430,534	330,383	12,882,235	768,867
Agriculture	12,289,411	557,046	49,389,763	36,303	47,213,553	804,883
Manufactures	7,761,702	522,723	21,810,697	673,545	54,261,266	664,372
Miscellaneous	214,145	108,127	287,209	164,125	330,509	100,405
Total merchandise	\$37,193,609	\$1,654,488	\$92,171,402	\$1,423,201	\$130,037,174	\$2,496,831
Coin and bullion	15	79,908	20	101,322	5,000	142,143
Grand total exports	\$37,193,624	\$1,734,396	\$92,171,422	\$1,524,523	\$130,042,174	\$2,638,974

EXPORTATIONS.

(Nine Months Ending December.)

	—1914—		—1915—		—1916—	
	Domestic.	Foreign.	Domestic.	Foreign.	Domestic.	Foreign.
The Mine	\$38,960,584	\$276,574	\$49,034,177	\$7,265,059	\$63,725,560	\$202,715
The Fisheries	14,117,351	104,393	16,103,698	85,945	18,075,556	171,412
The Forest	35,056,103	476,990	42,184,929	384,089	46,138,448	304,987
Animals and their Produce	58,436,712	2,330,424	78,559,429	2,193,963	93,586,906	3,916,500
Agriculture	106,608,923	34,840,516	202,506,936	17,111,054	317,451,445	5,130,017
Manufactures	53,186,926	5,613,002	119,399,269	5,752,596	317,841,414	6,163,671
Miscellaneous	456,440	2,999,002	3,745,610	1,183,089	4,810,484	1,135,660
Total merchandise	\$306,823,039	\$46,640,901	\$511,534,048	\$33,975,795	\$861,629,813	\$17,024,962
Coin and bullion	445	4,179,347	115	103,151,019	76,392	195,970,726
Grand total exports	\$306,823,484	\$50,820,248	\$511,534,163	\$137,126,814	\$861,706,205	\$212,995,688

New Incorporations

Information about various new and old enterprises, the incorporation of which has been announced in recent issues of the Canadian and Provincial Gazettes.

Some Toronto capitalists and merchants have interested themselves in the formation of the Ajax Rubber Company of Canada, Limited. The head office, so far, is in Toronto, and the authorized capital is \$1,000,000.

C. H. Bangs & Co., Limited, of London, have bought out the interests of the Owl Manufacturing Company and patents of inventions for automatic vending machines.

The Cornell Knitting Company, Limited, Toronto, has just been formed, to take over and expand the business of an unlimited company of the same name.

The well-known firm of Cutten and Foster, makers of automobile tops, boat tops, etc., have increased their capital to \$250,000 and become an incorporated company under the name of Cutten and Foster, Limited.

Another New York house is coming to Canada to enter the Canadian manufacturing field. Messrs. Kops Bros., Limited, manufacturers of corsets, will establish a branch in Toronto within a very short time.

A house that has been long established in fur dressing and dyeing business in New Jersey has taken out letters of incorporation to establish a branch in Montreal. We understand it is their intention to begin operations about the 15th of February. The house referred to is A. Hollander & Son, Limited, and they are authorized to use \$100,000 capital.

The tightness of the leather situation is evidently offering opportunities for the manufacture of substitutes. A company has recently been formed in Chambly Canton, Que., to manufacture fibrous material, fibre-board and leather-board. The name of the company is Bennett, Limited, and the authorized capital \$300,000.

The high price of raw materials in the foodstuff business has not restrained the Dignard Manufacturing, Limited, of Montreal, from taking out letters of incorporation authorizing the use of \$300,000 capital in the manufacture of confectionery, biscuits, vermicelli and other eatables.



INSURANCE



BIG INDUSTRIAL LOSS.

Destruction of the Canadian Car and Foundry Plant at Kingsland, N.J., Leads to Cancellation of Policies.

The president of the Canadian Car and Foundry Company has issued the statement that the total loss at Kingsland, N.J., on January 11th, has been estimated in the neighborhood of \$12,000,000. Of this amount approximately \$8,000,000 in finished high-explosive shells had been turned over to representatives of the Russian Government. Insurance on the plant amounted to about \$3,250,000, leaving the estimated loss to be borne by the company in the neighborhood of \$750,000.

In another week the full order for 5,000,000 shells would have been completed. Half the order, or 2,500,000 shrapnel, had been shipped to Russia, and the high-explosive shells were practically completed. Most of the loss was in shells and explosives.

Considerable reticence has been displayed in regard to the insurance carried and the companies interested. It is understood, however, that the insurance placed in the United States amounted to about \$2,300,000, and it is believed that London Lloyds had a great amount at risk. Apparently there will be very little salvage, and the loss must amount to many million dollars above the insurance. Owing to this and other similar losses in the United States, many American insurance companies have decided to cancel all insurance covering munition plants where loading is carried on.

THE ABSORPTION OF WEAK COMPANIES.

Reinsurance of the Business of Three Defunct Canadian Companies by the Western and British America.

Three fire insurance companies ceased to exist during 1916—the “Anglo-American,” “Montreal-Canada” and “Factories.” The business of all those companies was absorbed by the Western Assurance Company and the British America Assurance Company, which are under the same directorate and management. These two tariff companies, the leading companies of Canadian origin, have for the past ten years been struggling hard to make up for severe losses incurred in the Baltimore, Toronto and San Francisco conflagrations. They were very hard hit by these disasters, and have not yet been able to repair the impairment of their capital, although, of course, they are considered perfectly sound. It is doubtful whether the reinsurance of the three above-mentioned non-tariff companies, none of which were over sound at the time of their demise, can be considered as very good policy. One would think that the “Western” and “British America” would have enough troubles of their own without going to the rescue of every Canadian company getting out of its depth. A report is in circulation to the effect that the Insurance Department at Ottawa practically used coercion in order to bring about these reinsurances. It is to be hoped that the report is not true. It seems almost inconceivable that a Government official would attempt to force an underwriting deal on any company against its will.

THE 1916 RECORD.

Fire Insurance in Canada during Past Year was Carried on with Satisfactory Results.

During the year 1916, according to statistics compiled by the *Monetary Times*, fire insurance companies transacting business throughout Canada collected in premiums a total of

\$26,474,831 and paid out in losses \$14,161,948, the loss ratio working out at 53.49 per cent. From the companies' point of view this may be considered a very satisfactory year's business.

British companies have received more than 50 per cent. of the premiums collected in Canada, and paid more than 50 per cent. of the losses during the forty-seven years recorded. The aggregate totals of the fire insurance business in Canada are as follows:

Companies.	Premiums.	Losses.	Ratio. %
British	\$253,013,014	\$155,444,540	61.44
Canadian	91,230,608	57,200,156	62.70
United States and other.	78,711,796	44,483,186	56.51

The expansion in fire underwriting in Canada during the last twenty-five years of the period is shown in the following figures:

Companies.	Premiums received.	
	1890.	1915.
Canadian	\$1,249,884	\$4,559,076
British	4,072,133	13,609,360
United States	514,054	8,306,397

Companies.	Risks.	
	1890.	1915.
Canadian	\$135,145,294	\$673,244,131
British	427,931,692	1,438,037,721
United States	57,646,959	1,000,271,051

The rate per cent. of premiums charged upon risks taken is shown in the following table:

Companies.	Gross amount of risks taken during the year.	Premiums charged thereon.	Rate of premiums charged per cent. of risks taken.
British	\$1,438,037,721	\$16,807,401	1.17
United States and other	1,000,271,051	10,812,978	1.08
Canadian	673,244,131	8,427,965	1.25

These figures relate only to the business transacted by companies with a Dominion license. The business of companies operating only under provincial licenses is not included, nor, of course, is that transacted with unlicensed companies.

BARN FIRES IN ONTARIO.

A Conference Held to Discuss the Hazard and Find Means to Reduce the Risk.

There was a regular epidemic of barn fires in Ontario during the latter half of 1916. During the two months August and September no fewer than 121 were reported to the office of the Fire Marshal, who has given a good deal of his attention to the matter. It is estimated that the barn fires which occurred in August and September alone resulted in a loss of at least \$300,000, of which about 60 per cent. was borne by insurance companies and the balance by the farmers operating the farms. Many investigations were held as to the cause of the fires, it being at one time considered possible that incendiarism was to blame for a large proportion of the losses. Only in three cases, however, was definite proof of incendiarism obtained, and the investigators are quite sure that the cause is not to be traced to the operations of enemy emissaries.

The Fire Marshal summoned a conference of the representatives of about seventy farmers' mutual fire insurance companies in the provinces, as well as officials of other com-

panies, to discuss the hazard. Numerous theories have, of course, been advanced. Improper ventilation, crowded barns and absence of lightning rods are all given as probable causes. The most plausible theory appears to be that of the manager of one of the mutual companies. This gentleman suggests that in 1915 farmers had such difficulty in getting in their hay that, the following year, seeing such a wonderful crop in their fields, they hurried it in unnecessarily fast. Had they known that they were going to have six weeks of hot weather they would not have done this, but as it was many of them hauled the hay to the barns the day after it was cut. No doubt there was a shortage of labor, and many hay crops were not turned over in the fields sufficiently to allow them to be properly dried. The fact that barns may not be properly ventilated seems to have very little to do with spontaneous combustion, since we know that a stack in the open air may burn from this cause. Most fire insurance men will agree that the danger of spontaneous ignition becomes practically eliminated if the hay or other crop is stored and kept in a perfectly dry condition.

COMPARATIVE FIRE LOSSES.

The National Board of Fire Underwriters has compiled a table showing comparative per capita fire losses of various

countries throughout the world. The table is necessarily very incomplete, as it deals only with figures obtained from certain cities in each country. With the exception of the United States, the number of cities reporting is small and not very representative, particularly in the case of Canada. Nevertheless the table contains a number of interesting comparisons. The column headed "Population" refers only to that of the cities reporting for 1915:

	Population.				Per capita loss.		
	1915	1915	1911	1912	1913	1914	1915
Canada	3	294,344	2.61	2.88	2.46	3.58	2.79
United States.....	333	35,161,266	2.62	2.55	2.35	2.32	1.94
Chile	1	220,000	...	...	.30	...	.58
England	8	6,442,239	.53	.54	.33	.67	1.03
France	3	3,957,729	.81	.84	.49	.63	1.02
Germany	2	423,673	.21	.20	.28	.17	.49
Ireland	2	701,500	.58	.57	.28	.39	.55
Italy	3	1,078,691	.31	.90	.25	.37	.62
Norway .....	..	253,000	...	.69	.32	.48	.72
Philippine Islands	1	234,409	...	...	4.41	1.28	1.00
Russia	1	2,000,000	1.17	.84	.89	1.19	.95
Scotland	3	1,534,591	.56	.49	.36	5.35	1.62
Spain	1	608,700	...	...	2.30	.15	3.13
Sweden .....	..	392,427	...	.13	.74	.54	.29
Netherlands .	1	321,853	...	.12	.11	.07	.14

TRANSPORTATION

By J. E. WALSH

THE PANAMA CANAL.

Some Interesting Facts and Figures Regarding Traffic Through the Canal during the Last Few Months.

When the Panama Canal was first opened, it was used to a very large extent for coastwise traffic. Since the reopening of the canal early in 1916 very little freight has been carried between the Atlantic and Pacific coasts. As an illustration, there was only one vessel coastwise from the Atlantic to the Pacific during December, 1916, and two from the Pacific to the Atlantic. The tolls on ships in United States coastwise trade amounted to \$8,026.80. This amount was collected from ships bound from the Pacific to the Atlantic, no tolls being paid by coastwise vessels coming from the Atlantic to the Pacific.

The canal statistics for this month are interesting. The cargo carried in the month of December amounted to 547,683 gross tons. One hundred and fifty-five ships passed through the canal during the month. This number has only been exceeded once since the reopening, namely, in October, 1916, when the number was 158. British ships were nearly twice as many as United States, and more than four times the number of Norwegian vessels, the next highest. Of British ships 35 were from Atlantic to Pacific, 28 from Pacific to Atlantic—total, 63; United States, Atlantic to Pacific, 19, Pacific to Atlantic 18—total 37; the next highest, Norwegian, Atlantic to Pacific 6, Pacific to Atlantic 9—total, 15. There were 40 ships of other nations. No German vessels are included in the list.

The distribution of traffic over the principal trade routes is interesting. Twelve vessels carried traffic from United States to South and Central America, 19 to the Far East and Australasia, 17 from the Atlantic terminus to South and Central America. From the Pacific to the Atlantic 17 vessels

carried traffic from South and Central America to United States, and 3 from the Far East and Australasia, 20 from South and Central America to Atlantic terminus, 17 from the West Coast of South America to Europe.

The Panama Canal Record, from which the above statistics have been taken, publishes the following item, which, no doubt, will be of interest to members of the Association:

FACILITATING TRADE BETWEEN NEW ZEALAND AND THE ATLANTIC SEABOARD OF NORTH AMERICA.

In line with the development of trade between New Zealand and Atlantic ports of Canada and the United States, the Bank of New Zealand has arranged for the establishment of dollar credits with banks in America. The diversion of lines of steamships through the canal has been an important factor in building up the trade between these countries. Although most of the traffic through the canal to and from New Zealand is in connection with Great Britain, an increasing quantity of cargo is handled through American ports. Most of the American shipments to and from New Zealand are handled by the New Zealand Shipping Company, the Federal Steam Navigation Company, the Ellerman and Bucknall Lines, and the Union Steamship Company of New Zealand.

SOME GOOD ADVICE.

The Importance of Careful Marking and Addressing of Freight is Emphasized by Freight Associations.

Attention has been called on several occasions to the necessity of properly marking and addressing freight. Although there have been very few complaints as far as members of this Association are concerned, attention is called to Circular No. 141, issued by the Western Canadian Freight Association on the subject. The following is taken therefrom:

Rule 17 of the Canadian Freight Classification provides that—

Each package, bundle or piece of less than carload freight must be plainly marked with the information necessary to carry it to destination and insure proper delivery. Old marks must be removed or effaced.

All freight C.L. or L.C.L. for rail and lake transportation must be fully marked as above required.

Freight consigned to a place of which there are two or more of the same name must not be accepted unless the name of the county and province or state be given.

When freight is consigned to a place not located on the line of a railway, the bill of lading must state the name of the railway station at which the consignee will accept delivery, or if destined to a place reached by a water line, the name of the railway station at which delivery is to be made to such water line.

The attention of agents and shippers is again directed to the necessity of fully marking and addressing freight. Freight should not be accepted for transportation unless the following requirements and specifications are observed:

1. Each package, bundle or piece of less than carload freight forwarded all rail, also each package, bundle or piece of carload and less than carload freight forwarded "lake and rail" must be plainly marked, showing the name of the consignee and of the town or city, and province or state, to which destined, so as to ensure prompt delivery, even if separated from the waybill.

2. When consigned to a place of which there are two or more of the same name in the same province or state, the name of the county must also be shown.

3. The marks on bundles, packages or pieces must be compared with the shipping order or bill of lading, and corrections, if necessary, made by the shipper or his representative before bill of lading is signed by the agent of the carrier. *Old marks must be removed or effaced.*

Exception.—Should shippers or consignees desire to reship a consignment which is on hand refused or unclaimed, the old marks should be erased in such a way that the shipment will not lose its identity. It can then be re-addressed with the name of the new consignee so as to ensure reaching its proper destination.

4. Tags should be used only when the nature of the freight will not readily permit of the address being shown by the use of labels or otherwise marking.

5. The marks on bundles, packages or pieces must correspond with those shown in shipping order or bill of lading. For example, on a shipment to Winnipeg the package must be marked "Winnipeg," and not some other destination for which the goods may be ultimately intended. If packages are intended for redistribution beyond, a special designating mark may be used for the guidance of those attending to the redistribution, but only the destination given in the shipping order or bill of lading must be shown on the goods.

6. Frequently there is on the same boat or in the same car more than one consignment for one consignee. In order to prevent such consignments from becoming mixed, it will greatly facilitate their correct handling if shippers will also show on packages their name or trade mark. Consignments can then be delivered complete and errors avoided.

When name and address of shipper is marked on freight, it must be prefixed by the word "from."

7. When a shipment is destined to a point beyond the line of the originating carrier which can be reached by more than one route, either rail or water, agents must be particular to have shippers specify via which route the goods are to be forwarded.

8. If freight is consigned to a point not reached by any railway line, shippers must specify the railway station at which delivery is required, and the route, or if destined to a place reached by a water line, the name of the railway station at which delivery is to be made to such water line.

The proper marking and addressing of freight is as much in the interest of the shipper as of the carrier. Neglect in the proper addressing of packages may result in the loss or miscarriage of the goods.

These instructions are important, and agents must see that they are carried out.

BILLS OF LADING.

Notice to Shippers and Shipowners Respecting Manifests and Bills of Lading.

The attention of shippers and shipowners and the trading community generally is drawn to the fact that in time of war the practice of shipping goods with bills of lading made out "to order" (made illegal by Section 4 of the Customs (War Powers) Act, 1915, in the case of goods shipped from the United Kingdom under license) is very undesirable in respect of any goods exported from any part of the British Empire. Shippers of goods not requiring licenses are, therefore, advised not to make out bills of lading "to order," but only—

(a) To a named consignee, or

(b) To a bank or financial house of high standing, with the remark in the margin of the bill of lading "Notify A.B." "A.B." being the name of the person or firm for whom the goods are ultimately designed. Goods shipped to Holland should be consigned to the Netherlands Oversea Trust.

It is essential during the war that, in the case of all goods, whether shipped under license or not, British ships should have on board throughout the voyage a full manifest of cargo and all the bills of lading, or certified copies of the bills of lading.

Unless these requirements are complied with, there will be a risk that the ships will be stopped and diverted by H.M. ships or the war vessels of the allied nations, in order to permit of full examination of the cargo, and ascertainment of its destination.

In the case of British ships that will touch at ports in countries contiguous to enemy territory, compliance with these requirements is of special importance, and serious delay may result to ship and cargo in such cases if all ship's papers are not on board and in order.

This notice supersedes the announcement made by the Board of Trade on August 19th, 1915 (see *Board of Trade Journal* of 26th August, 1915, pp. 594-5), but in no way affects the requirements of Section 4 of the Customs (War Powers) Act, 1915, in regard to licensed goods.

Board of Trade, 19th October, 1916.

—From the *Canada Gazette*.

FERRY SERVICE DISCONTINUED.

The following announcement has been made by G. C. Martin, General Traffic Manager, Toronto, Hamilton & Buffalo Navigation Co., under date of January 19:—

"To Agents and Shippers:—

"Owing to the unprecedented accumulation of ice in Lake Erie, we have been compelled to suspend navigation via the Car Ferry Route, between Ashtabula Harbor and Port Maitland, at least three weeks before it was anticipated.

"All traffic routed via the Car Ferry is now moving via the Niagara Frontier.

"We desire to thank you for the traffic with which you favored us during the past season, and will appreciate your continued patronage when navigation is reopened, which we hope will be early in the month of March, and of which the earliest advice possible will be furnished you."

We are glad to record the closer affiliation with Canada of the Curtis Company. This company has been operating in Canada in specialty printing work, and has now taken out an Ontario charter and will continue to operate the plant in Windsor.

BACKING UP YOUR FIRE EQUIPMENT WITH MEN

(Reprinted from "Factory.")

"EVERYBODY talked about fire-fighting equipment and nobody said a word about backing up all the excellent equipment there is with an efficient inspection and fire-fighting organization," said the man who has charge of fire prevention matters in one large company in discussing what went on at a recent meeting on fire protection.

Is this man's criticism valid? He claims that the situation is not far different from that which exists in safety work. Most everyone agrees that safeguards alone will never prevent all accidents; a definite organization for safety is needed.

And this same man gives as one reason why the human side has been neglected that frequently fire prevention matters in individual plants have been left with people too far down the line in an organization. It is his idea that this phase of factory management has fallen under the supervision of men like shop engineers, who understand devices thoroughly, and in a corresponding degree fail to appreciate the full value of the human side. And they lack ability to manage and train men even if they do see value in backing up equipment with men.

And isn't there something in this? Isn't it a valid criticism of fire protection procedure in many plants?

Inspection a Prime Necessity.

Inspection is the place to begin, in the opinion of one authority. The best of sprinkler equipment and thermostat systems will not detect accumulations of refuse conducive to spontaneous combustion—at least not until a resulting fire operates these admirable devices. Even if a factory is small, assign to some one person the inspection of the plant aside from his other duties and make it daily, this man says.

An investigation carried on by *Factory* seems to indicate that most plants which have inspections from a fire prevention point of view make them once a week. Some make them daily, and a few seem satisfied with the insurance inspector's trips "once every three or four months."

At each of the plants of the International Harvester Company, for instance, there is an inspection daily, including Sundays, by a "chief of fire and watch," who has no other duties aside from fire prevention. In addition there is a general chief, who inspects all the works.

Some concerns have a periodic inspection of the fire apparatus itself, backed up by a more frequent inspection of general conditions from the fire risk viewpoint. For instance, the Parlin and Orendorff Company has its fire chief make a semi-monthly report to the superintendent on the condition of the fire brigade and its fire appliances. In addition, the fire regulations call upon the heads of departments "to examine each morning the water pails, sand pails and water barrels, and note if they are filled and in position; also to note as to cleanliness in the way of paper, rubbish or refuse collected or found near steam pipes or in any portion of the building, and see that same is disposed of."

Some Criticisms of Internal Inspection.

It will be argued that this arrangement has the fault that it distributes the responsibility among a number of people whose main duties are quite aside from any routine of fire prevention. Then, too, an outside inspector will be less lenient of lax conditions in a department than the head of that department.

From a control point of view there is much to be said in favor of centralizing authority for fire inspectors instead of

sub-dividing it. Often this centralized authority is given considerable power. For instance, the fire chief at the Goodyear Tire and Rubber Company inspects plants and sends written notices to departments where any fire hazard or blockage of fire apparatus or doors is noted. The fire chief has absolute authority to levy a fine against the department expense budget where his orders are not carried out.

The rather novel scheme of inspection at the plant of Deere and Company is described in a letter from A. H. Head, the superintendent, who writes: "We have a weekly inspection made of all fire apparatus by one of eight men, each of whom is an executive in the factory organization, such as chief engineer, master steamfitter, electrician, master mechanic, production superintendent and chief inspector." This, of course, has the advantage of focussing at intervals the special knowledge of each of these heads upon the inspections.

As several of those questioned brought out, good house-keeping is the one thing never to be lost sight of by fire inspectors, whoever does the work.

An interesting combination of duties is worked out at the National Tube Company's plant. "Instead of night watchmen," says the Bulletin of the American Iron and Steel Institute, "a paid night fire department patrols the plant, combining the duties of watchman service with trained fire protection. . . . The day watchmen inspect and report daily to the chief of the fire department on the condition of all fire protection equipment."

Safety Inspector Handles It.

In several plants, the investigation showed, fire inspection falls to the lot of the safety inspector. Such an arrangement avoids the duplication of effort which otherwise might result. When it comes to the smaller plants, naturally the superintendent does this work. But even here some argue that inspections should be made by someone "without so many irons in the fire," if but fifteen minutes is taken each time an inspection is made.

With the best of fire protection equipment well backed up by careful inspection, isn't the personal element still present, in that a force of specially trained men is needed to realize the most value from the equipment?

The concern that bought a piece of land adjacent to its plant and presented it to the city on condition that a city fire station be built there, probably has no fire brigade of its own. But every plant is not so pleasantly situated. Private fire brigades, while they may not be dignified by that term, are considered necessary in many factories. Very seldom do companies have paid firemen without other duties. Almost always they are regular workmen who have received special instruction on fire fighting. One concern, at the outset in its booklet on its fire brigade, states as the object "to allay excitement and alarm in case of fire." And then secondarily comes, "to protect and save property."

Fire Brigades.

The personnel of private fire brigades varies according to schemes peculiar to different companies, but almost always there is the intention of drawing men from a variety of departments, so that wherever a fire occurs some one of the brigade is early on the scene at a time when his special knowledge of what to do is particularly valuable.

In the Canton plant of the American Bridge Company six of the foremen compose the fire brigade. At another plant

the safety committee serve in that capacity. The American Iron and Steel Institute, through its bulletin, shows that at the Harrisburg Pipe and Pipe Bending Company "There are twenty guards on duty day and night through the plant, who also constitute the fire brigade, all of whom are assigned to certain stations through the plant."

While in a very few plants are firemen employed having no other duties, an appreciable percentage pay extra for this service, even if all drilling is done on company time.

The B. F. Goodrich Company has fifteen men in a regular fire department, and they expect soon to increase this number to twenty. These men sleep at fire headquarters in plant, and eat at nearby restaurants. They are employed as watchmen and roundsmen.

Generally payment is made contingent upon attendance at drill, and sometimes takes the form of a fixed payment of twenty-five or fifty cents for each drill attended.

Some companies base the pay upon the number of runs made, whether on test calls or for actual fires. This, of course, is practically the same thing as figuring it at so much each drill.

Where the members of the fire brigade are expected to live near the plant and respond to fires day and night, a straight extra wage is generally allowed.

How to Keep Up Interest.

To start a scheme of any sort is only a part of the problem. To keep it going is often the biggest end of it. And it's true of fire brigades. How to sustain interest is a question that the twenty-five or fifty cents a drill before mentioned will not answer. Many concerns stimulate interest by means of competitions between departments or factories. This, for instance, is the case at the International Harvester Company. Recently men were taken from the Akron, Ohio, plant to the Auburn, New York, factories to compete. In this concern there is a challenge cup offered for competition among the eastern works and another among the western.

The investigation shows that drills of the fire brigade, like foremen's meetings, are better held during working hours. At least most concerns so time their drills. There may be advantage, too, in holding drills while the other employees are at work. Thus responding to a real call has less panic possibilities than might otherwise exist. As in the case of inspections, once a week seems to be the usual frequency of drills for fire brigades.

The question, "Who trains your firemen?" brought a wide variety of answers. They are ranged from "nobody" to superintendent, and included chief machinist, chief engineer, safety engineer, plant inspector and fire chief. Here perhaps is the weakest point, as brought out by this investigation. While it may be that in each case the person designated in that particular plant is the one best qualified to train the fire fighters, it is open to question.

Employees Should Be Trained.

Nobody doubts the value of fire brigades, but not all plants need them if the employees as a whole receive proper fire instruction. But brigades in every plant should tell its employees something of the conduct it expects of them at a fire. It is merely what a good organization for education in fire prevention and protection would bring in any factory.

In many plants education is a powerful factor in fire fighting. At the Arlington Company's plant the motto, "Protect from fire; then make Puralin," has been so deeply impressed upon the minds of the employees of the plant that if any infringement of even the slightest rule against fire should be

committed by a new employee he is immediately cautioned and shown the serious side of the offence by some of the other employees.

Some concerns use the scheme followed by B. F. Avery & Sons in getting all fire-fighting facts before the employees. This company issues a booklet setting forth clearly and concisely what to do at a fire. In fact, it is a "Who's Who" and a "What's What" of fire prevention in that plant. To insure that the booklet will be preserved, an identification card is printed on the inside of the back cover, and a chapter on how to prevent fires in the home is included.

If a factory is small, an occasional questioning of individual employees as to the location of the nearest fire-box, extinguisher and fire hose is far better than no instruction. Some small plants give special instructions to a few sitting nearest to an extinguisher or special apparatus as to its operation.

Even if buildings are single story and easy of exit, there are precautions that many could take affecting at least a few in the plant. For instance, the Baker-Vawter Company writes, "On account of the fact that the buildings are all on one floor, are well scattered, and the number of workmen in each department is comparatively small, we have not developed any fire drill to speak of, although the engineer, fireman and millwright are fully informed of what to do in case of fire."

Educational campaigns, unless they are continuous, do not have a lasting effect. Mr. Vawter points this out when he says that changes in employees form the greatest drawback to efficiency in the fire protection of a plant.

More instruction on fire matters when men are hired is one way of overcoming this, but not so good probably as a continuation of educational campaigns to the working force as a whole.

FOR NATIONAL CREDIT.

Manufacturers Should Mark Goods for New Zealand "Made in Canada."

On account of the growing desire for goods manufactured in the British Empire, which exists in Great Britain and in all the colonies, Canadian exporters would do well to mark all goods manufactured in this country, "*Made in Canada.*" In this connection the following clipping from the *Board of Trade Journal* will be instructive:—

"The British Trade Commissioner in New Zealand (Mr. R. W. Dalton) writes that it has been pointed out to him that British manufacturers do not make sufficient use of the description "British made" on the goods they supply. In a market such as New Zealand, where there is a keen desire to purchase British goods whenever possible, such a description would have a strong selling force. At the present time this description would be even more effective as a selling point, partly as a result of the quickened interest in British goods, and partly because many firms are now making goods so much like goods which formerly came from Germany that the buyer is not sure that he is not being deceived when he is informed that the goods he is now offered are British.

"A case brought to the notice of the British Trade Commissioner recently was one in which a buyer in New Zealand returned a shipment of goods because he was convinced that they were of German manufacture. In view of the developments which have been made in the United Kingdom in the manufacture of goods formerly supplied by Germany, this case illustrates what might easily happen in instances where goods really are British but are similar to German goods."

Trade Enquiries

These enquiries come into our hands from various sources. The Weekly Bulletin of the Department of Trade and Commerce, from which the enquiries indicated in the sub-heading allotted to them are taken, should be read regularly by those interested in foreign trade. It will be sent free on application to the Department at Ottawa. The names connected with all those enquiries can be furnished direct from the Commercial Intelligence Department, Canadian Manufacturers Association, Toronto.

DOMESTIC TRADE ENQUIRIES.

715. **Feldspar.**—A new feldspar company, operating a mine north of Kingston, would like to hear from Canadian manufacturers who can use feldspar, analyzing approximately 64% silica, 20% alumina, 12% potash, with small percentages of soda, ferrous oxide and lime. An accurate copy of the assay can be submitted on application.
716. **Hoes.**—A correspondent in British Columbia would like to get in touch with makers of the so-called Gordon hoe. From the sketch submitted this is a hoe with a very narrow blade and two supports, one from each end, instead of the usual wide blade with one support in the centre.
717. **Binder Twine Machinery.**—We are in touch with a correspondent who requires machinery suitable for the equipment of a binder twine factory, and we should like to hear from any Canadian producers. Possibly machinery formerly used in this business, but now standing idle, would answer the purpose.

718. **Briquetting Machinery.**—We have an enquiry from a Western coal company desirous of obtaining machinery for briquetting soft coal. Kindly communicate at once with this office.
719. **Power Driven Air Compressors.**—A well-known Ontario manufacturer is interested in getting in touch with manufacturers of power driven air compressors of a type suitable for use in garages.
720. **Tungsten Lamps.**—A Toronto manufacturer is interested in obtaining promptly a quantity of 10-watt, 115-volt, spherical frosted lamps. The frosting must be put on in such a manner that it will not flake off. Anyone having this type of lamp at his disposal should communicate promptly with this office.
721. **Turned Wooden Boxes.**—We have an enquiry from an Ontario house, putting up quantities of druggists' sundries, in which they state they desire to obtain quantities of turned wooden boxes about 2 inches in diameter. If any Canadian manufacturer is in a position to supply these, it will be just so much new business created for this country, as original supplies came from elsewhere.
722. **Agencies.**—A gentleman in Quebec, formerly engaged in manufacturing on his own account, would like to get in touch with manufacturers who desire high-class representation in Quebec City and neighborhood. The very highest references can be furnished, and his capabilities are absolutely beyond question.

THE MINISTER OF FINANCE
REQUESTS
THE PEOPLE OF CANADA TO
BEGIN NOW
TO SAVE MONEY FOR THE
NEXT WAR LOAN

JAN. 9, 1917

DEPARTMENT OF FINANCE
OTTAWA

UNION BANK

OF CANADA

52nd ANNUAL MEETING

The 52nd Annual General Meeting of the Shareholders of the Union Bank of Canada was held at its Banking House, in the City of Winnipeg, on Wednesday, the 10th day of January, at twelve o'clock noon.

PROFIT AND LOSS ACCOUNT.

Balance at credit of account, 30th November, 1915	\$106,976 75	Which has been applied as follows:—	
Net profits for the year, after deducting expenses of management, interest due depositors, reserving for interest and exchange, and making provision for bad and doubtful debts, and for rebate on bills under discount, have amounted to	651,183 67	Dividend No. 116, 2 per cent., paid 1st March, 1916	\$100,000 00
		Dividend No. 117, 2 per cent., paid 1st June, 1916	100,000 00
		Dividend No. 118, 2 per cent., paid 1st September, 1916	100,000 00
		Dividend No. 119, 2 per cent., payable 1st December, 1916	100,000 00
		Bonus of 1 per cent., payable 1st December, 1916	50,000 00
		Transferred to Contingent Account	150,000 00
		Contribution to Officers' Pension Fund	10,000 00
		Contribution to British Sailors' Relief Fund	5,000 00
		War Tax on Bank Notes Circulation to 30th November, 1916	50,000 00
		Balance of Profits carried forward	93,160 42
	<u>\$758,160 42</u>		<u>\$758,160 42</u>

LIABILITIES.

Capital stock	\$3,400,000 00	\$5,000,000 00
Reserve Account	93,160 42	
Balance of Profit and Loss Account carried forward	\$3,493,160 42	
	4,013 53	
Unclaimed Dividends	100,000 00	
Dividend No. 119, payable 1st December, 1916	50,000 00	
Bonus of 1 per cent., payable 1st December, 1916		3,647,173 95
		<u>\$8,647,173 95</u>
Notes of the Bank in circulation	\$8,815,117 00	
Deposits not bearing interest	29,122,848 51	
Deposits bearing interest	60,144,940 61	
Balances due to other Banks in Canada	320,936 02	
Balances due to Banks and Banking Correspondents elsewhere than in Canada	1,476,235 12	
		99,880,077 26
Acceptances under Letters of Credit		512,281 32
Liabilities not included in the foregoing		695 50
		<u>\$109,040,228 03</u>

ASSETS.

Gold and Silver Coin	\$3,139,492 26	
Dominion Government Notes	6,965,529 00	
		\$10,105,021 26
Deposit with the Minister of Finance for the purpose of the Circulation Fund	260,000 00	
Deposit in the Central Gold Reserves	4,700,000 00	
Notes of other Banks	937,860 00	
Cheques on other Banks	4,016,138 02	
Balances due by other Banks in Canada	49,872 56	
Balances due by Banks and Banking Correspondents, elsewhere than in Canada	700,455 05	
Dominion and Provincial Government Securities not exceeding market value	2,100,547 50	
Canadian Municipal Securities, and British, Foreign and Colonial Public Securities other than Canadian	14,445,701 09	
Railway and other Bonds, Debentures and Stocks, not exceeding market value	3,170,871 47	
Call and Short (not exceeding 30 days) Loans in Canada, on Bonds, Debentures and Stocks	7,616,488 64	
Call and Short (not exceeding 30 days) Loans elsewhere than in Canada	8,484,897 00	
		\$56,587,852 59
Other Current Loans and Discounts in Canada (less rebate of interest)	49,173,367 16	
Other Current Loans and Discounts elsewhere than in Canada (less rebate of interest)	846,117 55	
Liabilities of customers under Letters of Credit, as per contra	512,281 32	
Real Estate other than Bank Premises	355,982 24	
Mortgages on Real Estate sold by the Bank	104,404 03	
Overdue Debts, estimated loss provided for	341,352 87	
Bank Premises, at not more than cost, less amounts written off	1,106,255 38	
Other Assets not included in the foregoing	12,614 89	
		<u>\$109,040,228 03</u>

JOHN GALT, President.
G. H. BALFOUR, General Manager.

REPORT OF THE AUDITORS TO THE SHAREHOLDERS OF THE UNION BANK OF CANADA.

In accordance with the provisions of sub-sections 19 and 20 of Section 56 of the Bank Act, we report to the Shareholders as follows: We have audited the above Balance Sheet with the books and vouchers at Head Office and with the certified returns from the branches.

We have obtained all the information and explanations that we have required, and are of the opinion that the transactions of the Bank which have come under our notice have been within the powers of the Bank.

In addition to our verification at the 30th November, we have, during the year, checked the cash and verified the securities representing the investments of the Bank at its chief office and principal branches and found them to be in agreement with the entries in the books of the Bank relating thereto.

In our opinion the Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the affairs of the Bank, according to the best of our information and the explanations given to us, and as shown by the books of the Bank.

T. HARRY WEBB, E. S. READ, C. R. HEGAN, Auditors,

Winnipeg, 20th December, 1916.

of the firm of WEBB, READ, HEGAN, CALLINGHAM & CO., Chartered Accountants.

THE DOMINION BANK

At the Forty-sixth Annual General Meeting of the Shareholders of The Dominion Bank, held at the Head Office in Toronto, on 31st January, 1917, the following Statement of the affairs of the Bank as on 30th December, 1916, was submitted :

PROFIT AND LOSS ACCOUNT

Balance of Profit and Loss Account, 31st December, 1915 ..	\$344,439 71
Profits for the year, after deducting charges of management and making full provision for bad and doubtful debts	\$969,065 02
Less	
Dominion Government War Tax (on circulation)	\$54,112 34
Taxes paid to Provincial Governments	21,450 00
	75,562 34
Making net profits of	893,502 68
	<u>\$1,237,942 39</u>

Which amount has been disposed of as follows:

Dividends (quarterly) at Twelve per cent. per annum	\$720,000 00
Contribution to Canadian Patriotic Fund \$25,000 00	
Contribution to British Red Cross Society	2,500 00
Contribution to British Sailors' Relief Fund	2,000 00
	29,500 00
Contribution to Officers' Pension Fund	25,000 00
	\$774,500 00
Written off Bank Premises	100,000 00
	\$874,500 00
Balance of Profit and Loss carried forward	363,442 39
	<u>\$1,237,942 39</u>

GENERAL STATEMENT LIABILITIES

Capital Stock paid in	\$6,000,000 00
Reserve Fund	\$7,000,000 00
Balance of Profits carried forward	363,442 39
Dividend No. 137, payable 2nd January, 1917	180,000 00
Former Dividends unclaimed ..	939 75
	<u>7,544,382 14</u>

Total Liabilities to the Shareholders..\$13,544,382 14

Notes in Circulation	\$7,118,232 00
Deposits not bearing interest ...	\$13,282,791 87
Deposits bearing interest, including interest accrued to date..	57,190,822 16
	<u>70,473,614 03</u>
Balances due to other Banks in Canada	196,714 90
Balances due to Banks and Banking Correspondents elsewhere than in Canada	787,557 22
Bills Payable	138,912 00
Acceptances under Letters of Credit	307,047 13
Liabilities not included in the foregoing	300,233 10

Total Liabilities to the Public..... 79,322,310 38
\$92,866,692 52

ASSETS

Gold and Silver Coin	\$1,915,648 41
Dominion Government Notes ..	9,220,183 25
Deposit with Central Gold Reserves	1,500,000 00
Notes of other Banks	835,395 44
Cheques on other Banks	3,539,659 51
Balances due by other Banks in Canada	10,582 37
Balances due by Banks and Banking Correspondents elsewhere than in Canada.....	2,729,601 76
	<u>\$19,751,070 74</u>
Dominion and Provincial Government Securities, not exceeding market value	612,273 98
Canadian Municipal Securities, and British, Foreign and Colonial Public Securities other than Canadian, not exceeding market value	7,500,764 35
Railway and other Bonds, Debentures and Stocks, not exceeding market value	4,184,382 61
Call and Short (not exceeding thirty days) Loans in Canada on Bonds, Debentures and Stocks	4,325,653 69
Call and Short (not exceeding thirty days) Loans elsewhere than in Canada	1,251,750 69
	<u>\$37,625,896 06</u>

THE DOMINION BANK—Continued

Other Current Loans and Discounts in Canada (less rebate of interest)	\$48,976,389 91
Other Current Loans and Discounts elsewhere than in Canada (less rebate of interest) ..	53,975 34
Liabilities of Customers under Letters of Credit, as per contra	307,047 13
Real Estate other than Bank Premises	28,096 44
Overdue Debts (estimated loss provided for)	115,598 02
Bank Premises at not more than cost, less amounts written off	5,482,351 92
Deposit with the Minister of Finance for the purposes of the Circulation Fund	263,900 00
Mortgages on Real Estate sold.	13,437 70
	<hr/> 55,240,796 46
	<hr/> \$92,866,692 52

E. B. OSLER,
President.

C. A. BOGERT,
General Manager.

AUDITORS' REPORT TO SHAREHOLDERS

We have compared the above Balance Sheet with the books and accounts at the Chief Office of the Dominion Bank, and with the certified returns received from its Branches, and after checking the cash and verifying the securities at the Chief Office and certain of the principal Branches on December 30th, 1916, we certify that, in our opinion, such Balance Sheet exhibits a true and correct view of the state of the Bank's affairs, according to the best of our information, the explanations given to us and as shown by the books of the Bank.

In addition to the examinations mentioned, the cash and securities at the Chief Office and certain of the principal Branches were checked and verified by us at another time during the year, and found to be in accord with the books of the Bank.

All information and explanations required have been given to us, and all transactions of the Bank which have come under our notice have, in our opinion, been within the powers of the Bank.

G. T. CLARKSON, } of Clarkson, Gordon &
R. J. DILWORTH, } Dilworth, C.A.

Toronto, January 17th, 1917.

EXPORT TRADE ENQUIRIES.

723. **Agencies.**—A well-recommended house in Johannesburg desires to represent Canadian manufacturers in South Africa. They mention specifically salmon, butter boxes and enamelware, but feel capable of handling almost any class of merchandise. We shall be glad to supply the name of this company to interested enquirers.
724. **Mica.**—We are in communication with a general commission agent in Petrograd who desires to have offers from Canadian suppliers of mica.
725. **Steel Split Pulleys.**—A well-known house in Sydney would like to get in touch with Canadian manufacturers of steel split pulleys. They are also interested in other lines of engineering supplies.
726. **Agencies.**—A well-known Australian house of commission agents, representing a number of good English manufacturers, mainly in hardware and engineering lines, is interested in hearing from Canadian manufacturers with a view to representation.

Condensed Advertising

PARTNER WANTED.

Well-established hosiery and knit goods mill seeks silent or working partners, men with knowledge of the business preferred. Good practical men with small capital not rejected. Apply to Box 93, INDUSTRIAL CANADA, Toronto.

POSITION WANTED—WILL SUPPLY CAPITAL.

Capable financial man, wide experience, seeks investment with services in a sound manufacturing or wholesale business.—Box 33, INDUSTRIAL CANADA.

EMPLOYMENT WANTED.

Financial officer having number of years' experience with financial and accounting departments of both public service corporations and industrial plants desires change, and is now open for engagement. Experience covers United States and Canada. Best of reasons confidentially given for desiring change. Address Box 44, INDUSTRIAL CANADA, Toronto.

WILL INVEST UP TO \$50,000.

A1 concern of highest standing, having considerably more capital than present business requires, wishes to become actively interested in sound commercial proposition that can stand thorough investigation; no patents, schemes, stock purchase or promotion projects; this offer, coming from reputable concern, can only consider serious applicants giving fair idea of proposition. Box 17, INDUSTRIAL CANADA, Toronto.

WISHES TO INVEST UP TO \$50,000.

Advertiser has \$50,000 to \$75,000 to invest (with services) in a legitimate business, manufacturing preferred; no attention paid to replies unless some particulars are given. Box 18, INDUSTRIAL CANADA, Toronto.

Bradford.

732. Woollen and worsted wastes from mills.

Bristol.

733. Canned goods and dried fruits, condensed milk.

734. Wire nails (round, oval and lost heads), in consignments of 20 tons.

Chalford (Gloucs.).

735. Maple, beech and birch dowels, ½ inch by 36 inch, ½ inch by 30 inch, 9/16 inch by 36 inch, 9/16 inch by 32 inch, 5/8 inch by 36 inch, 5/8 inch by 32 inch, (18 inch by ¾ inch, 18 inch by 10/16 inch), last two in maple only.

Glasgow.

736. Hosiery and other knitted goods.

144. Woodware: Household utensils and accessories.

Leeds.

204. Wood-pulp boards, 20 inch by 34½ inch, about 410 sheets to the cwt.; deal and batten ends or similar timber at low price for making cases; wire nails, 1½ inch by 13 g. and 1 1/8 inch by 15 g.

Sheffield.

288. Carbon steel twist drills.

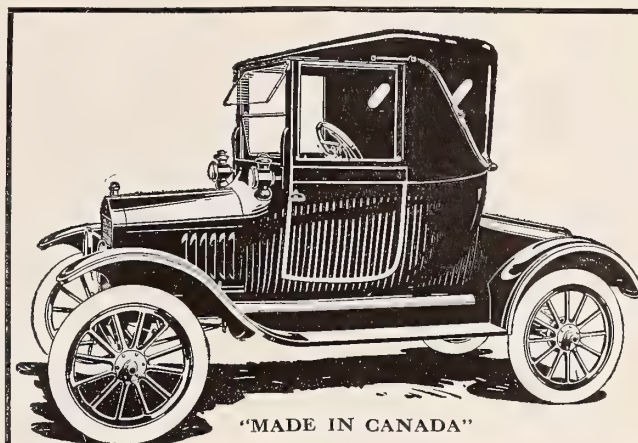
291. Spent liquor from sulphide wood-pulp paper, s.g. 607 twaddle.

London.

339. India-rubber goods, all kinds.

402. **Asbestos.**—A Japanese firm in Tokyo wishes to get into touch with suppliers of asbestos in Canada.

433. **Brass Sheets.**—A British firm of importers established at Sao Paulo, Brail, would like to receive a sample and pro forma invoice for some 450 brass sheets, very soft and pliable metal to be used for "working-up." Specification may be had on application to the Department of Trade and Commerce, Ottawa.



"MADE IN CANADA"

The 1917 Ford Coupelet \$695

f.o.b. Ford, Ont.

THE FAVORITE with business and professional men—snug and comfortable in winter with complete protection from cold or wet—equally convenient for fine weather use, as it can be converted into an open runabout in two minutes.

Ford Motor Company of Canada
Limited
FORD - ONTARIO

STEEL FACTORY EQUIPMENT



Steel Shop Boxes, Foundry Boxes, Shelf Boxes, Shop Barrels, Stools, Oily Waste Cans, Garbage Cans.

Gasoline Tanks and Pumps, Pressure Tanks, Storage Tanks, Smoke Stacks.

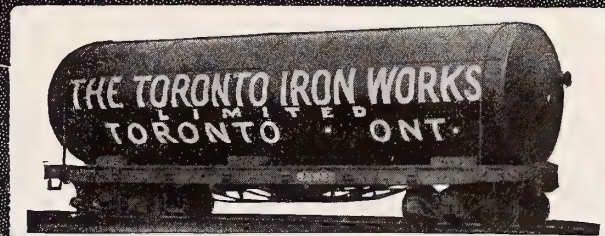
Anything in Black or Galvanized Sheet Metal up to ½ thick-ness. Send blue print or rough drawing and get our prices.

Sheet Steel Sundries for manufacturers is one of our specialties.

Write us

The Steel Trough and Machine Co. Limited
TWEED, ONT., CANADA

RIVETED STEEL TANKS FOR EVERY PURPOSE



OIL STORAGE - GASOLINE TANKS - AIR RECEIVERS
PNEUMATIC WATER SUPPLY TANKS - SMOKE STACKS
BOILER BREECHING - RIVETED STEEL PIPE - BINS & HOPPERS

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Factory Accounting a Speciality



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TORONTO STREET
TORONTO

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CONSULTING ENGINEERS

36 TORONTO STREET, TORONTO, CANADA

Reports, Arbitrations, Surveys, Disposal of Trade Wastes, Plans and Specifications for Industrial Plants, Structures in Steel and Concrete.

E. A. JAMES, M. Can. Soc. C.E. LIEUT. JOHN T. HOWARD, B.A. Sc.
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NEPONSET Paroid ROOFING

Going to Lay a Roof?

Use Paroid, and take no chances.

Paroid is used by the Canadian Government in Military Camp Construction, by the Railways on Round-houses, etc., and it is used on many of the most important factories throughout the Dominion.

It is fire-resisting, and has a record of

19 Years of Service

Made in three permanent colors
—Grey, Red and Green.

Write for prices, etc., to

BIRD & SON

Dept. I

Hamilton - Ontario

Warehouses:

Montreal, Winnipeg, Calgary

Vancouver, St. John

Edmonton

**LOOK FOR
THE ROLL
WITH
THE
PAROID
LABEL**



For Homes—Use
**NEPONSET
TWIN
SHINGLES**

Slate surfaced red and
green. Have all the
good qualities of Paroid.

**The Largest Manu-
facturers of Roofings,
Wall Boards and
Roofing Felts in Canada**

Among the Industries

Under this heading are published items of news of current interest concerning the activities of Canadian manufacturers. Information about changes of interest, enlargement of plants, and plans for future developments are always welcome, and are published free of charge, provided they should not be properly classified as advertisements.

* Items prefixed with an asterisk are based on official information received in each case from the companies mentioned. Other items, while secured usually from reliable sources, have not the same authoritative origin.

ALBERTA.

Edmonton.

The capacity of the Northwest Biscuit Company's plant will shortly be doubled.

Medicine Hat.

The new plant of the Lake of the Woods Milling Company, built to replace the one destroyed by fire on April 29th last, is now in operation.

BRITISH COLUMBIA.

New Westminster.

The Timberland Lumber Company, Western Trust Block, have purchased a site near here on which they intend to erect a \$200,000 timber mill. Construction will start in June, 1917. A number of workmen's cottages will be erected, previous to commencement of mill. A large wharf will also be built.

North Vancouver.

The North Vancouver Sash and Door Company's factory was damaged by fire to the extent of about \$3,000 or \$5,000.

Port Coquitlam.

Negotiations are under way by a syndicate interested in building both steel and wooden ships for Norwegian interests to acquire the site of the present shipyard at Port Coquitlam, B.C., which has been established at the confluence of the Pitt and Fraser Rivers, for the erection of wooden ships. It is said that the site is the best on the Pacific Coast for steel shipbuilding, the soil furnishing ideal foundations without the necessity of building up pile and cement foundations.

Princeton.

The Princeton Creamery Company are considering the erection of a creamery and equipment to cost \$5,000.

Vancouver.

Armstrong, Whitworth of Canada, Limited, Montreal, are considering opening up a Vancouver branch with the view of developing their business in mining drills, steel, etc., throughout the mining districts of British Columbia.

A movement is on foot for the establishment at Vancouver of a large chemical manufactory. T. B. Wakefield, of Oakland, Cal., is interested.

Victoria.

The Aetna Iron and Steel Company is applying for a site on the terminal area on which to erect a plant.

Work on additions to the Ladysmith smelter has been commenced under the direction of W. J. Watson, Manager. It is proposed to expend approximately \$100,000, the chief improvement being the installation of a converter.

This is the Trademark



which represents the highest grade of carbide produced in a modern carbide plant where nothing but carbide is made. That

IMPERIAL CARBIDE

is a *superior* grade of Calcium Carbide is confirmed by the fact that it is meeting the exacting requirements of a rapidly increasing number of users.

We will gladly quote you on your requirements. Just write to

Union Carbide Company of Canada, Limited

Head Office : DOMINION BANK BLDG., TORONTO

Works : WELLAND



Better Light—Better Work

Don't be "penny wise and pound foolish" about light in your plant. Be really economical and have lots of it. Be long-headed as well and use Hydro current and Hydro lamps.

Then you are getting the utmost possible for your money because of Hydro's basic principle, "The best service—at cost."

Our Engineers gladly report on your lighting system, and how it can be improved, without any cost to you. Why not use them?

Toronto Hydro-Electric System

226 Yonge

Phone Adel. 2120



We won't buy a Time Recorder

They have put down their reasons for not doing so. Would you like to hear them?

1. We don't care about TIME being money.
2. We don't care about accuracy of pay-roll.
3. We don't care about the loss of a few minutes per employee each shift. (Work this out!)
4. We don't care about fair treatment of employees.
5. We don't care about our competitors' lower costs and consequent success.
6. We don't care about wrangles with employees.
7. We don't care about time records being subject to change.
8. We don't worry about overhead and output.
9. We don't care what successful men in our line of business have done.



If pictures could move, we think you'd see these two men now looking at one another in a quandary as to who will shoulder the onus of those reasons being sound.

Let us send you full information and prices.

International Time Recording Co. of Canada, Limited

Anderson St., TORONTO
F. E. MUTTON, General Manager
MONTREAL: Cartier Bldg.
Cor. McGill and Notre Dame Sts.

WINNIPEG:
400 Electric Railway Bldg.

VANCOUVER:
817 Pender St. W.





Figuring out the Results

The best time to be pleased with a purchase is after you have bought and used it.

"Here is what our International Time Recorder has done for us.

1. It has satisfied our Employees.
2. Been the greatest peacemaker in our factory.
3. Stopped the serious leak that we couldn't trace.
4. Reduced our overhead burden as we pay only for the labor we get.

Are we satisfied? Well, ask us what it would cost to buy our Time Recorder if we couldn't get another to take its place! You'll get a shock."

*We make 95% of the world's Time Recorders.
Why? Ask our users.*

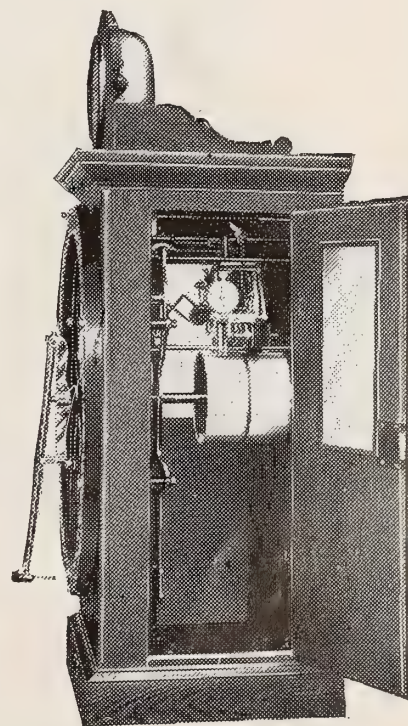
**International Time Recording Co.
of Canada, Limited**

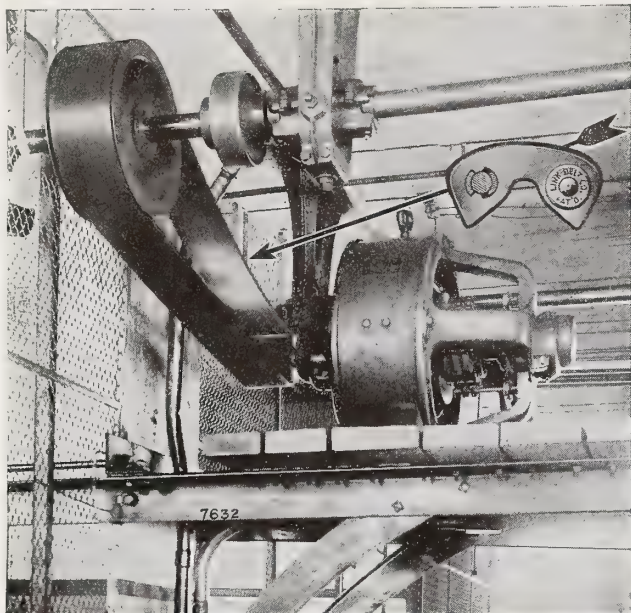


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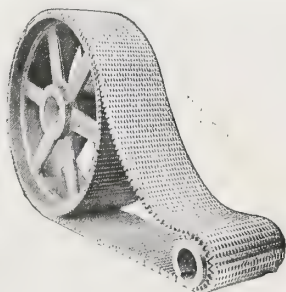


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For the Transmission
of Power

BUILT in units from $\frac{1}{4}$ H.P. to 500 H.P. and over. 98.2% efficient on actual test. Unsurpassed for power transmission in mills, factories and industrial plants. Used for individual machine drives, or for operating lineshafts.

Efficient power transmission is fully treated in our Data Book No. 125. It contains 112 pages of helpful information regarding Silent Chain Drives, including tables showing how to figure them, and to determine prices.



*Flexible as a Belt Positive as a Gear
More Efficient than Either*

CANADIAN LINK-BELT CO., LTD.

265 WEST WELLINGTON ST., TORONTO

MANITOBA.

Winnipeg.

Fire destroyed the plant of the F. J. Welwood Manufacturing Company, at Elmwood, Winnipeg. Loss is estimated at \$10,000.

Tenders will be called in the spring for the erection of a paper mill to cost \$500,000, by J. D. McArthur, McArthur Block.

NEW BRUNSWICK.

Edmundston.

Fraser, Limited, Edmundston, propose to build a pulp and paper mill.

St. John.

Contract has been awarded for the improvements now being made to the pulp and paper plant of the Nashwaak Pulp and Paper Company. Estimated cost is \$20,000.

The canning firm of Connors Bros. have recently undertaken the canning of beef. This firm have done a large business this year in the packing of fish, chiefly sardines.

NOVA SCOTIA.

Coxheath.

Work is to be started on the new smelter, etc., to be erected by W. N. McDonald, Esplanade, Sydney, N.S. Owner is in the market for a quantity of material.

ONTARIO.

Bridgeburg.

The Empire Limestone Corporation has purchased a site, and will locate here. A large dock will be erected.

The Canadian Chicago Bridge and Iron Works here is planning immediately to erect a large addition to its plant in the south ward.

AGENCIES WANTED

The undersigned is open to represent one or two responsible manufacturers in the City of Hamilton on a commission basis. Has extensive acquaintance with the general manufacturing interests of the city, and can furnish excellent references.

Address, **CHAS. A. MURTON,**
34 King William St., Hamilton, Ont.

Former Secretary Hamilton Branch
Canadian Manufacturers' Association.

PRESSES

Made in Canada

HYDRAULIC PRESSES, PUMPS AND ACCUMULATORS

Forging, Nosing and Marking Presses for all Size Shells
Presses for General Purposes

**WILLIAM R. PERRIN, Limited, TORONTO
CANADA**

Wire Cloth

of every description




WE MAKE
Machinery Guards
Window Guards
and
Metal Lockers

Our prices are right.
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"Metallic" Building Materials

THEY LOOK FINE!

Put "M-R Co."
Ceiling and Wall
Plates on your office
or warehouse walls.
They are sanitary,
economical, easily
put on, fire-proof
and they certainly
look smart and up-
to-date.



Send for Illustrations
and Prices.

The Metallic Roofing Company, Limited
Manufacturers of
"Eastlake" Shingles, "Empire" Corrugated Iron, etc.
Toronto, Ontario



MADE IN CANADA

Canadian Hart Wheels

CUT FASTER LAST LONGER

• Than any other wheels on the market

Tell us the service you want
performed and we will supply
you with an abraser that will
save you time, money and worry.

Send for one of our catalogues
and tell us your troubles. We
do the rest. :: :: :: ::

CANADIAN HART WHEELS LIMITED
450 BARTON ST. EAST

Hamilton :: :: Ontario

BE UP-TO-DATE!



USE STEEL BARRELS FOR YOUR PRODUCT
*instead of the old-fashioned,
leaky wooden ones.*

THE SMART-TURNER MACHINE CO., Limited
HAMILTON - CANADA

COTTON & WOOL WASTE

PACKED AT OUR
DOMINION WASTE FACTORY
TORONTO

THE GUARANTEE WITH OUR
Washed Cotton Wipers

All wipers have been hand selected, hard and starchy parts and buttons, etc., removed, sleeves and other closed parts opened and subjected to a thorough washing, rendering absolutely sanitary.

Write us for prices on our brands

SELECT WHITE MIXED COLORED
DARK COLORED

SCYTHES & COMPANY, LIMITED
Manufacturers and Jobbers, Toronto, Montreal

WASHED COTTON WIPERS

Camp Borden.

Representatives of the Imperial Munitions Board in Toronto awarded a \$3,000,000 contract for the establishment of an aviation school and plant at Camp Borden.

Chatham.

It is reported that the plant of the Chatham Bridge Company will be taken over by the Pittsburg and Dea Maines Steel Company, of Pittsburg, Pa., who will enlarge same.

Cobourg.

The Federal Steel and Foundry Company are having plans prepared for a steel plant and rolling mill to cost about \$250,000. T. H. Cole, of the Corbett Foundry and Machine Company, Owen Sound, Ont., is manager.

Elmira.

The Colonial Knitting Company are considering the erection of a knitting mill. Work is to start this summer.

Essex.

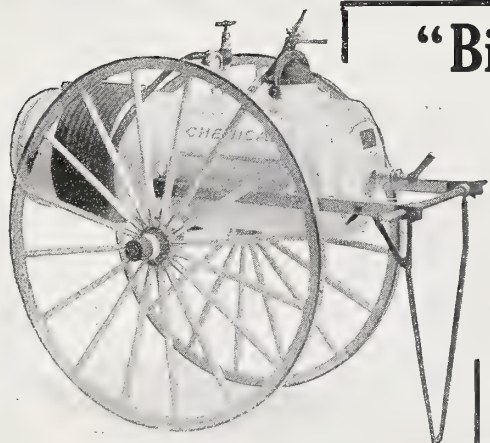
Plans are in progress for the erection of a basket factory, to cost \$5,000. Owner, Mr. M. A. Smith, Johnston's Mills, will install machinery.

Ford City.

Sketches have been prepared for the erection of a factory to cost \$27,000, by the Canadian Lamp & Stamping Company.

Galt.

*The factory of the Crown Hat Co., Limited, was damaged by fire on January 3rd to the extent of \$35,000. The company state that it is not their intention to resume operations again. The plant and stock suffered to such an extent that it is impossible for them to get into working order in time to secure this season's trade, and they are consequently forced to go out of business.



"Bickle Junior" Chemical Fire Engine

Protect your factory and warehouse from fire with a "BICKLE JUNIOR." It throws a chemical stream fifty feet long or thirty-five feet high and has a greater fire killing power than 1,600 gallons of water! Only thirty inches wide over all, goes through ordinary door openings and can be stored in any handy place. Pull a lever, open a valve and within ten seconds stream is going full force. One man can handle with ease. Get one or more according to size of your plant. It means sure protection and reduced insurance rates.

Try It Before You Buy It

We will ship you a completely equipped "BICKLE JUNIOR" Chemical Engine on trial, F.O.B. Woodstock, Ont. Build a fire of old lumber, saturate with kerosene and try the "BICKLE JUNIOR" on the blaze. If it doesn't handle the fire with ease ship it back without any obligation on your part. Write for descriptive booklet.

THE R. S. BICKLE COMPANY
EVERYTHING IN FIRE APPARATUS

WINNIPEG, MAN.

WOODSTOCK, ONT.



Canadian Pacific Railway Bridge, Trenton, Ont.
25 Spans, Weight 2,500,000 Lbs.

The HAMILTON BRIDGE WORKS

Company, Limited

HAMILTON, CANADA

ENGINEERS, MANUFACTURERS, CONTRACTORS

For Steam Railways, Electric Railways, Highways, Etc. For Factories, Offices, Warehouses, Power Stations, Mill Buildings, or any other purposes

STEEL Bridges

Buildings

JOHN MORROW SCREW AND NUT CO.

LIMITED

Set Screws

Hexagon Head Cap Screws

Fillister Head Cap Screws

Button Head Cap Screws

Flat Head Cap Screws

Engine Studs

Collar Screws

Coupling Bolts

Planer Screws

Boiler Patch Bolts

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Taper Pins

Malleable Iron Thumb Screws

Malleable Iron Thumb Nuts

Semi-Finished Nuts

Finished Nuts

Twist Drills, High Speed
and Carbon

INGERSOLL



ONTARIO

THE CANADIAN BRIDGE CO., Limited

WALKERVILLE, ONTARIO

—MANUFACTURERS—

RAILWAY AND HIGHWAY BRIDGES

Locomotive Turn Tables. Roofs, Steel Buildings and Structural Iron
Work of all Descriptions

DOMINION BRIDGE COMPANY, Limited

Head Office and Works: Montreal, P.Q.

Branch Offices and Works: Toronto, Ottawa, and Winnipeg

ENGINEERS, MANUFACTURERS AND ERECTORS OF STEEL STRUCTURES

CAPACITY 135,000 TONS

Railway and Highway Bridges, Swing and Bascule Spans, Buildings of all Kinds, Hemispherical Bottom and other Tanks, Transmission Poles and Towers, Riveted Pipe, Caissons, Barges, Turntables, Electric and Hand Power Cranes, Hoisting Appliances, Lift Locks, Hydraulic Regulating Gates, etc. Gear Cutting and General Machine Work.

Large Stock of Standard Structural Material at All Works

LACQUERS

Bronzing Liquids (Banana Oil), Amyl Acetate, Incandescent Lamp Coloring, Fusel Oil, and Specialties

MANUFACTURED BY

Cosmos Chemical Co.
PORT HOPE, ONT.

EXPORTERS OF

Reed Organs, Piano Stools,
Music Cabinets.

Catalogue B.



The Goderich Organ Co. Limited
GODERICH, CANADA



Closet Seats,
Flush Tanks,
Medicine Cabinets,
Everything for the Bathroom.

Write for Catalogue C and Price List.

Old Tyme Pure Maple Syrup

AND

Maple Butter

SOLD EVERYWHERE



Maples Limited

Manufacturers and Refiners
TORONTO CANADA

Grimsby.

*A by-law granting a loan to the Metal Craft Co., Limited, has been carried by a large majority. The company purposes erecting, almost immediately, a modern factory and moulding plant, which will enable them to considerably expand their present business. They manufacture aseptic steel hospital furniture and equipment, also sheet steel specialties.

Guelph.

The International Malleable Iron Co., Limited, Beverley Street, plan to erect a foundry to cost about \$15,000.

The Page-Hersey Iron & Tube Company are making some slight alterations in their plant here to take care of some munitions work.

H. Milton.

Tenders will be called shortly for the erection of an addition of brick construction to the Tallman Brass Company's factory, to cost \$50,000.

Tenders are being received by Prack and Perrine, architects, Lumsden Building, Toronto, for the erection of a five-story office building for the Canadian Westinghouse Company. Estimated cost is \$150,000.

Fire at the plant of the National Machinery & Supply Company did damage estimated at \$20,000.

London.

It is reported that the Quaker Oats Company, whose plant at Peterboro, Ont., was recently destroyed by fire, has purchased the factory of the Canadian Cereal Company, this city, and will double the capacity of the plant.

ESTABLISHED 1875

The Boiler Inspection and Insurance Co. of Canada

Continental Life Building, Toronto

Issues Policies of Insurance after
A CAREFUL INSPECTION OF
THE BOILERS Covering LOSS
OR DAMAGE TO PROPERTY
and LOSS RESULTING FROM
LOSS OF LIFE AND PERSONAL
INJURIES. :: :: :: ::

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HARTFORD STEAM BOILER
INSPECTION AND INSURANCE
COMPANY. :: :: ::

Assets for Security of Policy-
holders, \$4,552,020.43. :: ::

JOHN L. BLAIKIE	- - -	President
H. N. ROBERTS	-	Vice-President and Sec'y
GEO. C. ROBB	- -	Chief Engineer
A. E. EDKINS	- -	Ass't Chief Engineer

THE NICHOLS CHEMICAL COMPANY, LIMITED

MANUFACTURING CHEMISTS

HEAD OFFICE: 222 ST. JAMES STREET, MONTREAL

Branch Office—120 Mill Street, Toronto

WORKS: Capelton, Que., Sulphide, Ont., Barnet, B.C. WAREHOUSES: Montreal, Toronto

Sulphuric Acid
Muratic Acid
Nitric Acid
Hydrofluoric Acid
Mixed Acid

Sulphate Soda
Sulphide Soda
Hypo-Sulphite Soda
Bi-Sulphite Soda
Phosphate Soda

Glauber's Salt
Blue Vitriol
Sulphate Alumina
Papermaker's Alum
Caustic Soda

Bleaching Powder
Tri-Sodium Phosphate
Ammonia
Salt Cake
Tin Crystals

Agents for Baker & Adamson's Chemically Pure Acids and Chemicals
AGENTS FOR CANADIAN SALT CO.—"WINDSOR" BRAND CAUSTIC SODA & BLEACHING POWDER

DELANY & PETTIT, LIMITED

Joint and Veneer
Glue

Always uniform.

OFFICE:

133 Jefferson Avenue,
TORONTO, ONT.



Special Woodworking
Garnet Paper and
Cloth

WORKS:

105-131 Jefferson Avenue
106-118 Atlantic Avenue

NOTICE

The following are the Factory Inspectors
for the Province of Ontario:

JAMES T. BURKE, Chief Inspector, Toronto
W. T. E. BRENNAGH, Port Arthur.
H. A. CLARK, Toronto.
MISS M. CARLYLE, Toronto
W. S. FORSTER, Ottawa
A. W. HOLMES, Toronto
ROBT. HUNGERFORD, Toronto
FRED KELLOND, Hamilton
S. J. MALLION, Stratford
MRS. A. BROWN-REDDICK, Toronto
H. J. TUTT, Toronto

Persons having business with any of the Inspectors should communicate with them at the Parliament Bldgs., Toronto.

Phone Main 5800 HON. F. G. MACDIARMID,
Minister of Public Works and Highways.



NOTICE

To Manufacturers, Dealers,
and Users of Steam Boilers.

All steam boilers built in, or entering the Province of Ontario, and boilers exchanged or repaired, are subject to Government Inspection as prescribed in the Steam Boilers Act, 3 George V., C. 61.

Before any work of repair or alteration is commenced on any boiler, notice must be sent to the Department stating the nature and extent of the repairs or alterations proposed to be made. If the Chief Inspector should consider such repairs or alterations of an extensive character, the boiler must be inspected in accordance with the Regulations by an Inspector authorized under the Act.

All communications should be addressed to the Steam Boiler Branch, Department of Public Works, Parliament Bldgs., Toronto.

HON. F. G. MACDIARMID, D. M. MEDCALF,
Minister of Public Works. Chief Inspector of Steam Boilers.



NOTICE

TO STATIONARY AND HOISTING ENGINEERS

Everyone operating a STATIONARY steam plant of 50 h.p. or over in the Province of Ontario must hold a Stationary Engineer's Certificate from the Board of Stationary and Hoisting Engineers. Anyone operating such a plant without a Certificate is liable to the penalties set forth in the Stationary and Hoisting Engineers' Act.

Everyone operating a HOISTING steam plant working at a pressure of 20 pounds or over irrespective of horse power, and used for hoisting in structural operations or excavating purposes, in the Province of Ontario, must hold a Hoisting Engineer's Certificate from the Board of Stationary and Hoisting Engineers. Anyone operating such a plant without a Certificate is liable to the penalties set forth in the Stationary and Hoisting Engineers' Act.

Application forms for obtaining STATIONARY or HOISTING Engineers' Certificates may be had upon applying to the Chairman.

HON. F. G. MACDIARMID, W. C. MCGHIE,
Minister of Public Works and Highways. Chairman of Board.

Established
1849

BRADSTREET'S

Capital and Surplus - - \$1,500,000

Offices Throughout the Civilized World

Executive Offices: Nos. 346 and 348 BROADWAY, N.Y. CITY, U.S.A.

THE BRADSTREET COMPANY gathers information that reflects the financial condition and the controlling circumstances of every seeker of mercantile credit. Its business may be defined as of the merchants, by the merchants, for the merchants. In procuring, verifying, and promulgating information, no effort is spared, and no reasonable expense considered too great, that the results may justify its claim as an authority on all matters affecting commercial affairs and mercantile credit. Its offices and connections have been steadily extended, and it furnishes information concerning mercantile persons throughout the civilized world.

Subscriptions are based on the service furnished, and are available only by reputable wholesale, jobbing and manufacturing concerns, and by responsible and worthy financial, fiduciary, and business corporations. Specific terms may be obtained by addressing the Company at any of its offices.

OFFICES IN CANADA

Edmonton, Alta. Hamilton, Ont. London, Ont.
Halifax, N.S. Ottawa, Ont. Quebec, Que.
Montreal, Que. Toronto, Ont. Vancouver, B.C.
St. John, N.B. Winnipeg, Man. Calgary, Alta. Victoria, B.C.

THOS. C. IRVING, Gen. Man. Western Canada, Toronto

*Beatty Brothers, Limited, of Fergus, are at present preparing plans for the erection of a new foundry here to accommodate fifty moulders. It will be built on a new ten-acre site in Chelsea Green. They are in the market for a complete set of foundry equipment, either new or second-hand, in first-class condition.

Gordon Phillip, industrial commissioner, has announced that an American concern, manufacturers of invalids' goods, will establish a Canadian plant here.

The Imperial Munitions Board have decided to start a munitions assembling plant in London, and have secured a factory.

George Trudell, late of the Empire Brass Company, will convert the old traction company power house in Chelsea Green into a plant for the refining and smelting of metals.

New Toronto.

Brown's Copper & Brass Rolling Mills, Limited, will shortly erect a new wire mill and other buildings.

Niagara Falls.

Damage to the extent of several hundred thousand dollars was done by fire on January 26th to the American Cyanide plant.

Orangeville.

Negotiations will shortly be started with a view of re-opening the plant of the Superior Portland Cement Company. The plant has now been idle or about three years, the company having been liquidated.

ECONOMY

Rapid production is dependent on the use of ECONOMICAL TOOLS AND STEEL. It is safer *not* to specify High Speed Steel, but

Demand "Tyr," the Economy Steel

MADE IN CANADA

ARMSTRONG, WHITWORTH OF CANADA
LIMITED

Offices, 22 Victoria Square, Montreal

Dominion Bank Building, Toronto

WORKS, LONGUEUIL, P.Q.

YOU CAN INCREASE YOUR POWER WITHOUT INCREASING THE SIZE OF YOUR POWER PLANT

Your present line shafting is consuming from 15% to 60% of your power.

The Chapman Double Ball Bearing will save this waste and turn it into productive energy.

They will also reduce your oiling and attention to a minimum.

They fit any adjustable hanger and the change can be made with but little delay to you.



In use in over 2,000 Canadian Factories

The Chapman Double Ball Bearing Company
OF CANADA LIMITED

339-351 Sorauren Avenue

Toronto, Canada

STRUCTURAL STEEL WORK OF EVERY DESCRIPTION.

BUILDINGS

BRIDGES

PENSTOCKS

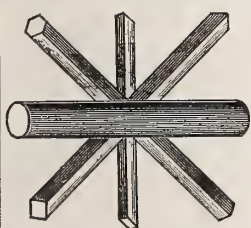
ROOF TRUSSES

COLUMNS, ETC.

TANKS



TOWERS

Main Plant of **MACKINNON, HOLMES & CO., LIMITED, SHERBROOKE, QUE.**

COLD DRAWN, TURNED AND POLISHED STEEL

SHAFTING

ROUNDS, SQUARES, HEXAGONS AND FLATS

 $\frac{1}{8}$ in. to 6 in. Dia. $\frac{1}{4}$ in. to $2\frac{1}{4}$ in. $\frac{1}{4}$ in. to $2\frac{1}{4}$ in. up to $1\frac{1}{2}$ in. x 3 in.

FREE CUTTING SCREW STOCK

PISTON AND PUMP RODS

FINISHED KEYS

The CANADIAN DRAWN STEEL CO., Limited
HAMILTON, ONTARIO

"CRANES MADE IN CANADA"



ELECTRIC TRAVELING CRANES

HAND POWER TRAVELING CRANES

ELECTRIC HOISTS

AIR HOISTS

FOUNDRY EQUIPMENT

NORTHERN CRANE WORKS, LIMITED WALKERVILLE, ONTARIO

UNION DRAWN STEEL CO., Limited
HAMILTON, ONTARIO

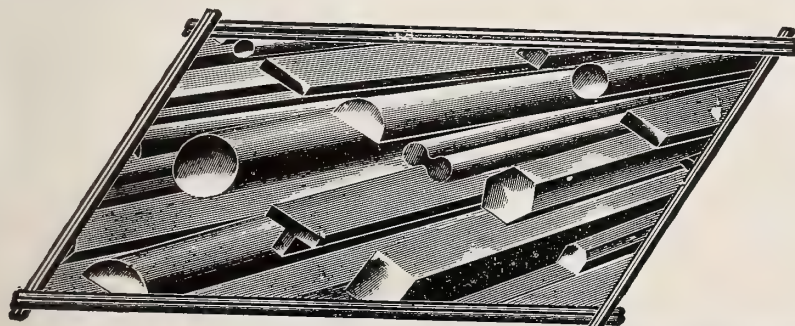
MANUFACTURERS OF

Shafting

Rounds, Flats, Squares
and Hexagons

LARGEST STOCK IN CANADA

Get prices before ordering elsewhere.



Said the Superintendent to the Purchasing Agent—

“The ‘Famous Five’ Files, Fred, are sharp and hard and do lots of work, and, if we discard them as soon as they cease to be efficient (as the maker suggests), we will get the best results. The firm that is manufacturing and selling 60,000,000 files a year must know how to make them to the best advantage; so specify ‘Famous Five’ when next you order.” They are:



When writing advertisers, please mention INDUSTRIAL CANADA.

Orillia.

Work is to start on the addition to be made to the smelter of the International Molybdenum Company to convert scrap into pig iron. Some machinery will likely be required.

The new factory of the Orillia Worsted Company, at Orillia, Ont., has been completed, and operations are to start shortly.

Ottawa.

The Capital Wire Cloth Manufacturing Company plans addition, estimated to cost \$10,000.

The International Feldspar Co., Limited, have their head office in Ottawa, but are operating a quarry about twenty-five miles north of Kingston, from which they produce very high quality feldspar, such as is used in enamelware and crockery businesses. It contains high percentages of potash and soda, and is finding quite a large market in the United States.

J. Albert Ewart, Sparks Street, has been appointed architect for rebuilding the printing plant for Rolla L. Crain Company, Limited, near Preston Street. The building will be of solid brick construction.

Application for a charter has been made at Ottawa to incorporate a company of eastern and western financiers, who will finance a company to develop electric power and manufacture pulp and newsprint paper in Manitoba. The plant will be located near Winnipeg. The capital stock of the concern is \$5,000,000.

Owen Sound.

The erection of a mill is contemplated by the Northern Bolt & Screw Company, Limited, 17th Street East.

Paris.

An interesting amalgamation has just taken place in the gypsum business. The two companies formerly operated in Caledonia and Lythmore, Ontario, are now joined together and operate under the name of the Ontario Gypsum Co., Limited. The head office is in Paris.

Parry Sound.

The new plant of the British Cordite Co., to be built here by Canadian Explosives, Limited, for the Imperial Munitions Board, will, it is said, probably be the largest works of its kind in Canada. Orders for material are being placed by Canadian Explosives, Limited, Montreal.

Port Arthur.

All buildings in connection with the pulp and paper mills to be erected by the Port Arthur Pulp and Paper Company, Limited, to cost \$1,000,000, will be of brick and reinforced concrete construction with steel trusses. General Manager, A. G. Pounsford, Room 206, Bell Telephone Building, Toronto, will buy material, equipment and furnishings. The first unit will be a fifty-ton sulphite plant. One million hard burnt brick will be required.

Preston.

Work has been started by the Preston Car and Coach Company on the erection of a three-story car shop, to cost \$75,000.

Fire destroyed the blacksmith and finishing shops of the Preston Car and Coach Company. Loss, \$100,000.

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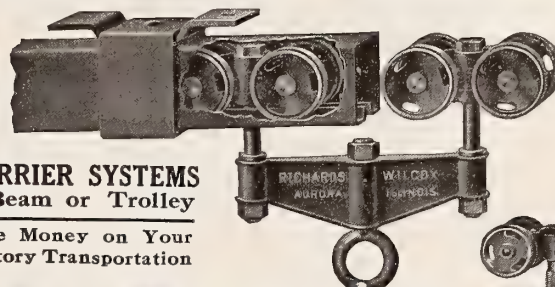
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"D.K."

BALATA BELTING

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Engineer's Supply Co., 123 Bannatyne Ave. E., WINNIPEG

St. Catharines.

The St. Catharines Brass Works are building a factory.

Seaforth.

The erection of a basket factory, to cost \$5,000, is being considered by R. W. Nicholson, Strathroy, Ontario.

The Board of Trade is at present negotiating with a firm which contemplates establishing a box factory here.

Thorold.

The Exolon Company, manufacturers of abrasive refractory materials and ferro-silicon, have awarded the contract for an addition to their plant at an estimated cost of \$100,000. This will increase the production by 100 per cent.

Toronto.

Work will be started shortly on a \$50,000 five-story brick construction warehouse for the Dominion Envelope Company, 90 Ontario Street. Contracts will be awarded shortly.

Canadian Aeroplanes, Limited, have purchased a site of 9½ acres in the city of Toronto, where they will erect an aeroplane factory, at a cost of some \$200,000. The location is on the vacant property west of Dufferin Street and north of Lappin Avenue. The buildings will be of brick and steel construction, and will occupy 4½ acres, leaving the remainder of the site for future extensions. Erection is to start in the beginning of February. It is expected that the factory will be in operation early in the summer.

The factory of the Channel Chemical Co., Limited, 369 Sorauren Avenue, was damaged by fire recently to the extent of \$5,000.

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Nazareth, Brennan and Dalhousie Streets
MONTREAL

The Toronto Harbor Commissioners have completed arrangements with the Imperial Munitions Board, through the chairman, Mr. J. W. Flavelle and Col. Carnegie, whereby the Munitions Board will have erected for them an electric steel and forging plant with an initial capacity of 300 tons per day. There will be ten six-ton three-phase 25-cycle Heroult type electric furnaces. Each furnace will consume about 2,000 horse-power, which will be supplied by the Hydro Electric Commission. It is stated that the plant will finally occupy sixty acres of the reclaimed land. Work on the foundations will be started at once, and it is expected that the plant will be in operation next July.

Plans are being drawn for an addition of brick construction to the factory of the William Davies Company.

Work has started on an addition to the factory of the Chapman Double Ball Bearing Company here, to cost \$17,500. The building will be one story, brick construction.

The Harris Glue Factory are negotiating with the Harbor Commissioners for the purchase of 2½ acres on the west side of the Don, south of Queen Street. The proposal is to remove the factory from its present site and install a more up-to-date system in a new plant.

Weston.

The Canada Cycle and Motor Co., Limited, Weston Road and Dufferin Street, are considering the erection of a factory building. The company have received fixed assessment from the Township Council.

Warton.

It is reported that the Canada Furniture Company, whose factory was recently destroyed by fire, loss \$80,000, will rebuild.



\$141,017.00 worth of abrasive wheels imported into this country in the last fiscal year, that should have been "MADE IN CANADA."

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Buy Matches As You Would Any Other Household Commodity —With An Eye to Full Value!

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Through bills of lading issued to all points in Australia, New Zealand, Tasmania and other islands of Oceania.

Marine Insurance effected at rates equal to those given from New York.

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Windsor.

A. H. Brener, 362 Dufferin Avenue, London, and 62 Sandwich Street, Windsor, contemplates the erection of a cigar factory and garage, to cost \$75,000.

QUEBEC.

Maisonneuve.

*The United Shoe Machinery Co. are building an addition to their tack factory to take care of the increased demand for their goods. They are now operating additional equipment at some disadvantage, and this machinery will be installed in the new building, while the old factory will be utilized for other purposes. The new building is of brick and steel construction, 170x100 feet, one story high, with saw-tooth roof. In addition to the main building there is a plate storage and pickling room, 20x86 feet, running parallel with the new tack building.

Montreal.

Samuel Osborn, Canada, Limited, will shortly establish a plant in Montreal for the purpose of manufacturing high-speed tools for machine shops and special uses. They will also have a hardening plant in charge of a Sheffield expert for treatment of steels.

Tenders are in and contracts will be awarded about March 1st in connection with the extension to be made to the factory of the Imperial Tobacco Company, 900 St. Antoine Street.

The erection of an addition to the dyeing and cleaning factory owned by Dechaux Freres, 661 Montcalm Street., is contemplated.

Glues, Gelatines Size, Isinglass, Manures, etc.

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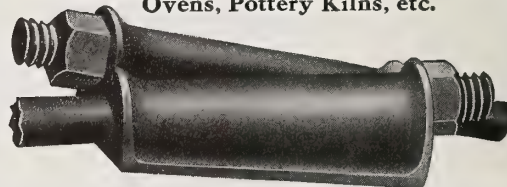
Enquiries for Samples and Quotations promptly attended to, and Orders Booked at Toronto.

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Flat Bands 2 to 6 inches wide

Best Malleable Iron—Prompt Shipments.

OTTERVILLE MFG. CO., LIMITED
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CANADIAN NORTHERN'S YEAR

Of its total revenues—\$35,476,275.06—the freight earnings of the Canadian Northern System for the fiscal year ended June 30th, 1916, were \$26,560,213.12, an increase of \$8,352,412.60, or 45.87 per cent. over those for the preceding twelve months.

This is a clear demonstration of the truth of the statement that, in Canada, the railway is the greatest of all agencies for the development of agriculture and the other great industries that are more or less dependent for their prosperity upon the opening of vast fertile areas to settlement.

These figures are significant because of the clearness with which they show the intimate relation-

ship between the expansion of the Canadian Northern Railway System and the development of the trade of the Dominion.

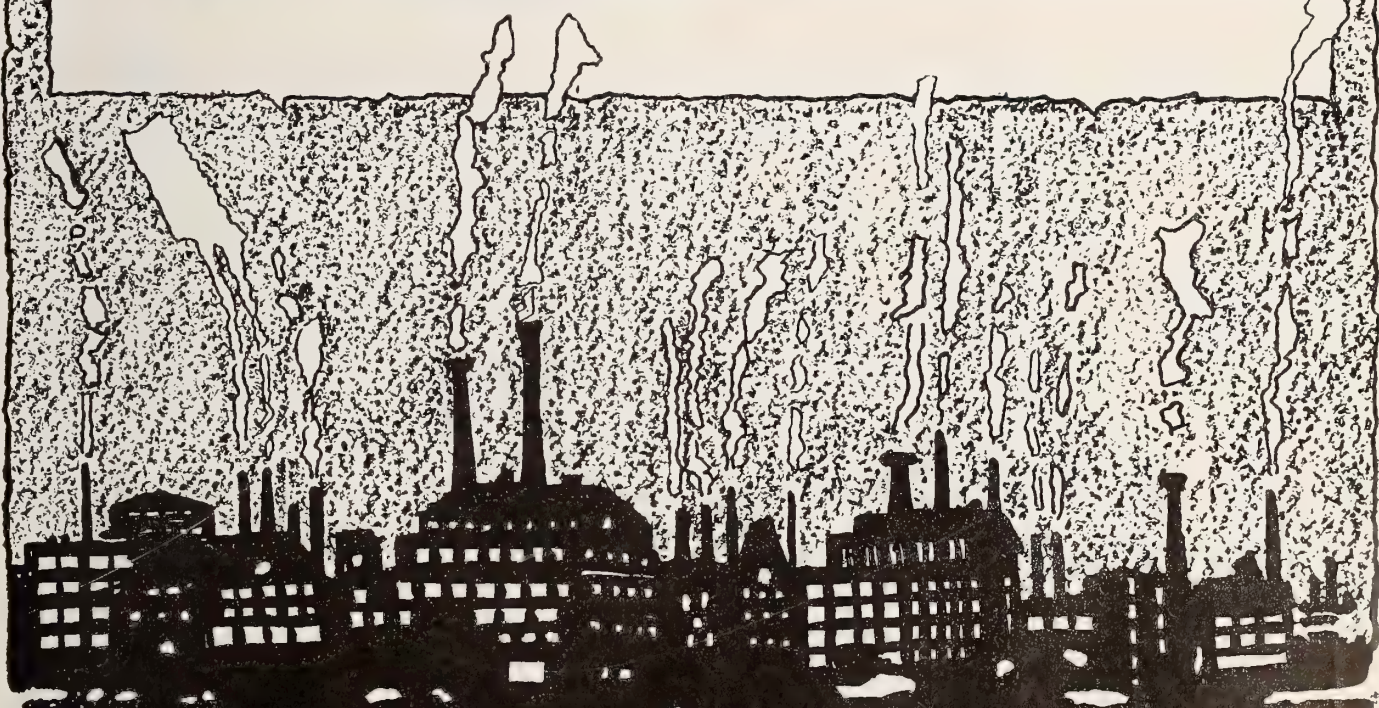
And this, despite the fact that the Company's revenues were adversely affected by a lack of terminals at Vancouver and Montreal, which are in process of construction, and by the lack of a rail connection with the American Railway lines converging at the Niagara frontier.

These developments are for the future—the immediate future—and will enable the Canadian Northern to provide the complete transcontinental service it set out to attain to nearly twenty years ago.

TEST CANADIAN NORTHERN SERVICE

It should be of particular interest to manufacturers to remember, that while the Canadian Northern Railway opened vast areas to settlement, it also sought successfully for the immigrants to people in part the lands so made available. The lines to that great market from the centres of Ontario and Quebec, and from Victoria to Vancouver, are now in operation. It will be well worth while to test the service.

Principal Offices at: Halifax, N.S.; Quebec, Que.; Montreal, Que.; Ottawa, Ont.; Toronto, Ont.; Port Arthur, Ont.; Winnipeg, Man.; Regina, Sask.; Saskatoon, Sask.; Prince Albert, Sask.; Edmonton, Alberta; Calgary, Alberta; Kamloops, B.C.; New Westminster, B.C.; Vancouver, B.C.; Victoria, B.C.

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We want
to equip your
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Esty Fire Sprinklers

and show you
how to reduce
insurance
costs 50% to
80%.

IT'S A GREAT BIG MONEY SAVER.

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H. G. VOGEL CO. CANADA LIMITED
169 Duke St., MONTREAL, P.Q.

The shoe factory of Eugene Guay and Co., rear of 230 St. Margaret Street, was recently damaged by fire to the extent of \$15,000.

St. Johns.

Contract has been awarded for the erection of an extension to the plant of the Crucible Steel Company, of America, 19 St. Peter Street, Montreal. Owners will purchase new machinery.

St. Laurent.

The Canada Stove & Foundry Company are having plans prepared for a boiler house, estimated to cost \$30,000, and will call for tenders about March. Manager, J. St. Germain.

Sherbrooke.

Changes in the management of MacKinnon, Holmes & Co., Limited, of Sherbrooke, Que., have recently taken place, caused by the retirement from the company of A. R. Holmes, who, in the past, has occupied the position of director and secretary-treasurer. It is understood that J. W. Bowman, president, and G. D. MacKinnon, vice-president and general manager, have purchased the holdings of A. R. Holmes and his friends, and new directors, in the persons of Dr. A. W. Klein, of Greenwich, Conn., M. L. MacKinnon and J. Nichol, of Sherbrooke, Que., have been elected with F. C. Johnston, secretary-treasurer. The business will be conducted as in the past, under the management of G. D. MacKinnon, and it is understood the company is making extensive plans for future development. This company has been particularly

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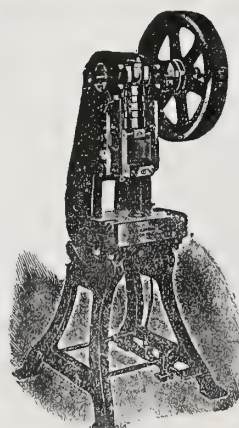
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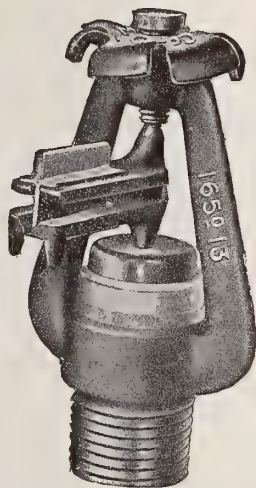
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successful in its general business of structural steel and steel-plate work, having one of the most complete plants in the country for these special lines. It has also been successful in the forging of shells for the Imperial Munitions Board, having a very complete and up-to-date plant for this special work.

Three Rivers.

Work will be started immediately on the erection of a steel factory, to cost \$100,000. The site has been secured.

SASKATCHEWAN.

Saskatoon.

The W. A. Jenkins Manufacturing Company, London, Ontario, contemplate building a branch factory here.

OIL POSSIBILITIES IN NEW BRUNSWICK.

According to a recent bulletin of the St. John Board of Trade, New Brunswick undoubtedly possesses a valuable asset in its oil shales deposits near St. John. One of the best English authorities on oil, Sir Boverton Redwood, who made an exhaustive survey of this deposit two years ago, reported that the New Brunswick shale was capable of producing 33 imperial gallons of crude oil per ton of shale, and 60 lbs. sulphate of ammonia. It is estimated that a plant with a capacity of 1,500 long tons per day can retort 547,500 tons per annum, equalling 18,000,000 imperial gallons of crude oil and 13,687 tons of sulphate of ammonia. The oil may be divided up as follows: Gasoline, 2,137,500 gallons; illuminating oil, 7,951,500



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more value into their products, without
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instead of imported fabrics. Our cottons,
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goods—and are the logical raw materials
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LIMITED

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OF EVERY DESCRIPTION

gallons; lubricating oil, 2,565,000 gallons; fuel oil, 1,710,000 gallons; paraffin wax, 6,120,000 lbs.; coke, 1,530 tons. This distillation estimate is based upon the old method. By some of the newer methods it is claimed that New Brunswick shale oil will produce more than three times the above quantity of gasoline per ton. It is believed that there is already sufficient shale available to operate for 50 years at least five plants of the capacity of the one above proposed. The New Brunswick shale is said to be of much better quality than the shale of Colorado, and the quantity is greater. The geological authorities at Washington, recognizing this fact, have been devoting considerable attention to the New Brunswick deposit. Increased development in connection with these deposits is looked for within the next few months.

NEW INCORPORATIONS.

The city of Kingston is to be the location of another smelting and refining company. The St. Lawrence Smelting and Refining Co., Limited, has just been incorporated, with \$100,000 capital and powers to do all sorts of treating, assaying, refining, etc., of metals. At the present moment we have not ascertained the facts, but we are under the impression that this company will occupy the buildings occupied by the North American Smelting Company.

A shortage of tools has evidently created the opportunity for the Universal Machinery Co., Limited, Montreal, capital \$200,000. We hope that they will be able to increase the production of these very necessary appliances without seriously disturbing the conditions of labor.

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Domestic *and Shoddy*

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- *Dominion Abrasive Wheel Co., New Toronto, Ont.

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- *The Brown Bros., Ltd., Toronto.

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- Economic Acetylene Burner Co., Toronto.

ACIDS

- *The Grasselli Chemical Co., Ltd., Toronto.
- *The Nichols Chemical Co., Ltd., Montreal.

ADVERTISING NOVELTIES

- Lawson & Jones, Ltd., London, Ont.

AERATED BEVERAGES

- Charles Gurd & Co., Ltd., Montreal, Que.
- J. J. McLaughlin, Ltd., Toronto.

AIR COMPRESSORS

- *Canadian Ingersoll-Rand Co., Sherbrooke, P.Q.
- *Jenckes Machine Co., Sherbrooke, P.Q.
- *Smart-Turner Machine Co., Ltd., Hamilton, Ont.

ALCOHOL

- The St. Hyacinthe Distillery Co. Ltd., St. Hyacinthe, Que.
- *Hiram Walker & Sons, Limited, Walkerville, Ont.

ALE

- E. L. Drewry, Winnipeg, Man.

ALUMINUM

- *Northern Aluminum Co., Ltd., 1305 Traders Bank, Toronto.

ALUMINUM CASTINGS

- *Tallman Brass & Metal Co., Hamilton, Ont.

AMMONIA

- Canadian Ammonia Co., Ltd., Toronto.

ANGLE BARS

- *The Steel Company of Canada, Limited, Hamilton, Ont.

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- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS SHEATHING:

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS SHEET AND PISTON PACKINGS

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS STEAM PIPE AND BOILER COVERINGS

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS TEXTILES:

- *Eureka Mineral Wool & Asbestos Co., Toronto.

AUTOMOBILE ACCESSORIES,

- *Northern Electric Co., Limited, Montreal.
- *Tallman Brass & Metal Co., Hamilton, Ont.

AUTOMOBILE PARTS

- *Dominion Forge & Stamping Co., Walkerville, Ont.

AWNING CORD (cotton)

- Hamilton Cotton Co., Hamilton, Ont.

AXLES

- Canada Forge Co., Ltd., Welland, Ont.
- Guelph Spring & Axle Co., Ltd., Guelph, Ont.

AXLES, carriage and automobile

- Guelph Spring & Axle Co., Ltd., Guelph, Ont.

BABBITT METAL

- Alonzo W. Spooner, Limited, Port Hope, Ont.
- *The Canada Metal Co., Toronto.
- *Tallman Brass & Metal Co., Hamilton, Ont.

BACON

- E. W. Fearman Co., Ltd., Hamilton, Ont.

BAGS

- *Scythes & Co., Ltd., Toronto.

BAGS, Cotton

- The Canadian Bag Co., Ltd., Montreal, Que.

BAGS, jute

- The Canadian Bag Co., Ltd., Montreal, Que.
- *Scythes & Co., Ltd., Toronto.

BAGS, travelling

- J. Eveleigh & Co., Ltd., Montreal, Que.
- Lamontagne, Ltd., Montreal, Que.
- The M. Langmuir Mfg. Co., of Toronto, Ltd., Toronto.

BAKING JAPAN

- *Berry Bros., Ltd., Winnipeg, Man.

BAND RESAWS:

- *P. B. Yates Machine Co., Ltd., Hamilton, Ont.

BANK AND OFFICE RAILINGS

- *The Geo. B. Meadows, Toronto, Wire, Iron & Brass Works Co., Ltd., Toronto.
- *Canada Wire and Iron Works, Hamilton, Ont.

BANK FITTINGS

- The Canadian Office & School Furniture Co., Ltd., Preston, Ont.

BANK RAILINGS AND CAGES

- *Canada Wire and Iron Goods Co., Hamilton, Ont.
- *Dennis Wire & Iron Works Co., London.

BANK SIGNS AND FITTINGS

- *Tallman Brass & Metal Co., Hamilton, Ont.

BARRELS, steel, and containers

- *Smart-Turner Machine Co., Ltd., Hamilton, Ont.

BARS, iron

- London Rolling Mill Co., Limited, London, Ont.

BARS, steel

- London Rolling Mill Co., Limited, London, Ont.

BASEBALL GOODS

- A. J. Reach Co., Brantford, Ont.

BATHS, enamelled

- Amherst Foundry Co., Ltd., Amherst, N.S.

BATTERIES, dry

- The Canadian National Carbon Co., Ltd., Toronto.
- Canadian Carbon Company, Ltd., Toronto.

BEARINGS

- *The Chapman Double Ball Bearing Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BEARINGS, bronze

- *Tallman Brass & Metal Co., Hamilton, Ont.

BEARINGS, pillow block and up-right

- *Dodge Mfg. Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BEARINGS

- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BEDS, camp folding

- *Otterville Mfg. Co., Ltd., Otterville, Ont.

BEEF

- E. W. Fearman Co., Ltd., Hamilton, Ont.

BEER

- E. L. Drewry, Winnipeg, Man.

BELTING, chain conveyors

- *Canadian Link Belt Co., Toronto.

BELTING, chains

- *Dodge Mfg. Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BELTING, Elevator

- *Canadian Consolidated Rubber Co., Ltd., Montreal, Que.

BELTING, leather

- The Beardmore Belting Co., Ltd., Toronto.
- *J. L. Goodhue & Co., Danville, P.Q.
- *Sadler & Howarth, Montreal.

- *The D. K. McLaren Belting Co., Ltd., Montreal.
- *The J. C. McLaren Belting Co., Ltd., Montreal.

BELTING, rubber

- *Canadian Consolidated Rubber Co., Ltd., Montreal, Que.
- *Gutta Percha & Rubber, Limited, Toronto.

BENT GOODS

- The Crown Lumber Co., Woodstock, Ont.

BICYCLES AND ACCESSORIES

- *Canada Cycle and Motor Co., Ltd., Toronto.

BISCUITS

- The Montreal Biscuit Co., Montreal, Que.

BLACK SHEETS

- *A. C. Leslie & Co., Montreal.

BLANKETS

- Slingsby Mfg. Co., Ltd., Brantford, Ont.
- J. Walsham & Son, Ltd., Bolton, Ont.

BLANKETS, horse

- Slingsby Mfg. Co., Ltd., Brantford, Ont.
- J. Walsham & Son, Limited, Bolton, Ont.

BLASTING ACCESSORIES

- Canadian Explosives, Ltd., Montreal, Que.

BLEACHING POWDER

- Canadian Salt Co., Ltd., Windsor, Ont.

BLOWERS

- *Sheldons, Ltd., Galt, Ont.

BOATS OF ALL KINDS

- Peterboro Canoe Co., Ltd., Peterboro, Ont.

BOILER COMPOUND and OILS

- Electric Boiler Compound Co., Ltd., Guelph, Ont.

BOILER PRESERVATIVES

- *Beveridge Paper Co., Limited, Montreal, Que.

BOILERS

- *M. Beatty & Sons, Ltd., Welland, Ont.
- *Darling Bros., Montreal.
- *Goldie & McCulloch Co., Limited, Galt, Ont.
- John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.
- *Polson Iron Works, Ltd., Toronto.
- J. & R. Weir, Montreal, Que.
- Taylor-Forbes Co., Ltd., Guelph, Ont.
- *Jenckes Machine Co., Sherbrooke, Que.
- *The Waterous Engine Works Co., Ltd., Brantford.

BOILERS, hot water or steam.

- Steel & Radiation, Ltd., Toronto.
- Warden King, Ltd., Montreal, Que.

BOILERS, steam.

- *Jenckes Machine Co., Sherbrooke, Que.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.
- Steel and Radiation Ltd., Toronto.
- Warden King, Ltd., Montreal, Que.
- *The Waterous Engine Works Co., Ltd., Brantford, Ont.

BOILERS, steam and brass work

- *The Waterous Engine Works Co., Ltd., Brantford, Ont.

BOILER STANDS

- Anthes Foundry Ltd., Toronto.

BOLSTERS

- *Canadian Car & Foundry Co., Ltd., Montreal, Que.

BOLTS

- *The National Acme Mfg Co., Montreal, Que.

BOLTS AND NUTS

- *The Canadian Tube & Iron Co., Ltd., Montreal, Que.
- *The Steel Company of Canada, Limited, Hamilton, Ont.
- Starr Mfg. Co., Ltd., Dartmouth, N.S.

BOOKBINDERS

- R. G. McLean, Toronto.
- *The Brown Bros., Ltd., Toronto.

BOOKCASES

- *Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

BOOKCASES, sectional (Gunn)

- The George McLagan Furniture Co., Ltd., Stratford, Ont.

BOOKLETS

- Stone Limited, Toronto.
- R. G. McLean, Toronto.

BOOKS, blank

- *The Brown Bros., Ltd., Toronto.

BOOTS AND SHOES

- Ames-Holden-McCreedy, Ltd., Montreal, Que.
- J. Leckie Co., Ltd.
- The John Ritchie Co., Ltd., Quebec, Que.

BOXES, cellular board:

- *The Thompson & Norris Co. of Canada, Ltd., Niagara Falls.

BOXES, rattle and soap

- The Arlington Co. of Canada, Ltd., Toronto.

BOXES, steel shop

- *Steel Trough and Machine Co., Ltd., Tweed, Ont.

BOXES AND SHOOKS, wooden

- The C. Beck Mfg. Co., Ltd., Penetanguishene, Ont.

BOXES, wooden

- G. & J. Esplen, Montreal, Que.
- Barchard & Co., Ltd., Toronto.

BRAIDS AND TRIMMINGS

- The Moulton Mfg. Co., Limited, Montreal.

BRAKE SHOES

- *Canadian Hart Wheels, Limited, Hamilton, Ont.

BRANDS, burning

- Pritchard, Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

BRASS BOLTS AND NUTS

- *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS, BRONZE and ALUMINUM LETTERS

- *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS ENGRAVERS

- Pritchard, Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

BRASS FOUNDERS AND FINISHERS

- *The Booth-Coulter Copper & Brass Co., Ltd., Toronto.
- *Tallman Brass & Metal Co., Hamilton, Ont.



By Royal Warrant

“Canadian Club” Whisky

Fully Ripened in Wood. Age Guaranteed by Government.

QUALITY UNEXCELLED

Distilled and Bottled by

HIRAM WALKER & SONS
LIMITED

Walkerville, Canada

LONDON

CHICAGO

NEW YORK

MEXICO CITY

VICTORIA, B.C.

WINNIPEG

BRASS GOODS

*The Booth-Coulter Copper & Brass Co., Ltd., Toronto.
 *Mueller Mfg. Co., Sarnia.
 The Garth Co., Montreal, Que.
 The James Morrison Brass Mfg. Co., Ltd., Toronto.
 *The Kerr Engine Co., Ltd., Walkerville, Ont.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS PLATES

Geo. Booth & Son., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS RODS, SHEETS AND PLATES

*Brown's Copper and Brass Rolling Mills, Ltd., New Toronto.

BRASS SIGNS AND MEMORIALS

*Tallman Brass & Metal Co., Hamilton, Ont.

BRASS TUBING, seamless

Canadian Seamless Wire Co., Ltd., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS WIRE

Canadian Seamless Wire Co., Ltd., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS WORK, church

Pritchard, Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

BRASS WORK, special

Bawden Machine Co., Ltd., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.
 *Booth-Coulter Copper & Brass Co., Ltd., Toronto.
 *The Watrous Engine Works Co., Ltd., Brantford, Ont.

BRICK

National Brick Co. of Laprairie, Laprairie, P.Q.
 Port Credit Brick Co., Port Credit, Ont.

BRICK, enamel

National Brick Co. of Laprairie, Laprairie, P.Q.

BRICK, pressed

National Brick Co. of Laprairie, Laprairie, P.Q.

BRICK, rubbing

*Canadian Hart Wheels, Limited, Hamilton, Ont.

BRICK, sewer

National Brick Co. of Laprairie, Laprairie, P.Q.

BRIDGES, Railway and Highway

*Dominion Bridge Co., Montreal.
 *Hamilton Bridge Works Co., Ltd., Walkerville, Ont.
 *The Canadian Bridge Co., Ltd., Hamilton, Ont.
 *The Structural Steel Co., Limited, Montreal, Que.

BROOMS

Simms, T. S., & Co., Limited, St. John, N.B.
 Stevens-Hepner Co., Limited, Port Elgin, Ont.

BRUSHES

Simms, T. S., & Co., Limited, St. John, N.B.
 Stevens-Hepner Co., Limited, Port Elgin, Ont.

BRUSHES, carbon

Canadian National Carbon Co., Ltd., Toronto.

BUCKET TANKS

*The General Fire Equipment Co., Limited, Toronto, Ont.

BUCKLES, shoe and coat

Parmenter & Bulloch Co., Limited, Gananoque, Ont.

BUILDING BLOCKS, vitrified, salt glazed

Standard Clay Products, Ltd., St. Johns, Que.

BUILDING FELT and PAPER

*Eureka Mineral Wool & Asbestos Co., Toronto.
 *Paterson Manufacturing Company, Toronto and Montreal.

BUILDERS, ship

*Polson Iron Works, Limited, Toronto.
 J. & R. Weir, Montreal, Que.

BURLAPS

The Canadian Bag Co., Limited, Montreal, Que.
 *Seythes & Co., Ltd., Toronto.

BURLAPS, decorative

Dominion Oil Cloth Co., Limited, Montreal, Que.

CABLE, Copper and galvanized

*The Steel Co. of Canada, Ltd., Hamilton, Ont.

CABLES, transmission and tele-phones

*Eugene F. Phillips Electrical Works, Ltd., Montreal, Que.

CABLES, Transmission and Cable

*Northern Electric Co., Limited, Montreal, Que.

CABLES, wire

The Dominion Wire Rope Co., Ltd., Montreal, Que.
 *The B. Greening Wire Co., Ltd., Hamilton, Ont.

CALENDARS, ADVERTISING

NOVELTIES, etc.
 Rolph & Clark, Limited, Toronto.
 Lawson & Jones, Limited, London, Ont.
 Stone Limited, Toronto.

CAMERAS

Canadian Kodak Co., Limited, Toronto.

CAMPERS' OUTFITTERS

Slingsby Mfg. Co., Ltd., Brantford, Ont.

CANOEES

Peterboro Canoe Co., Ltd., Peterboro, Ont.

CANS, baking powder, etc.

American Can Co., Montreal and Hamilton.
 A. R. Whittall, Montreal, Que.

CANS, fruit

American Can Co., Montreal and Hamilton.
 A. R. Whittall, Montreal, Que.

CANS, tin

A. R. Whittall, Montreal, Que.
 American Can Co., Montreal and Hamilton.

CANS, iron, lead and putty

A. R. Whittall, Montreal, Que.

CANVAS

*Seythes & Co., Ltd., Toronto.

CAPS, cloth

John W. Peck & Co., Ltd., Montreal, Que.

CARBIDE

*Canada Carbide Co., Ltd., Montreal, Que.
 *Union Carbide Co. of Canada, Ltd. Works, Welland, Ont. Head Office, Toronto.

CARBON BRUSHES

Canadian Carbon Co., Limited, Toronto.

CARBON PRODUCTS

Canadian Carbon Co., Limited, Toronto.

CARBONS, arc light

Canadian Carbon Co., Limited, Toronto.

The Canadian National Carbon Co., Ltd.

CARBONS, flame

Canadian Carbon Co., Limited, Toronto.

CARBONIC ACID GAS

Canadian Carbonate Company, Ltd., Montreal, Que.
 *Canada Carbide Co., Ltd., Montreal, Que.

*Union Carbide Co., Welland, Ont.

CARD RECORD SYSTEMS

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

CARPETS AND RUGS

Toronto Carpet Mfg. Co., Limited, Toronto.

CARPETS AND RUGS, Axminster and ingrain

Toronto Carpet Mfg. Co., Limited, Toronto.

CARPETS AND RUGS, Brussels and Wilton

Toronto Carpet Mfg. Co., Limited, Toronto.

CARPET YARNS, worsted and wool

Toronto Carpet Mfg. Co., Limited, Toronto.

CARRIAGES, baby, etc.

Canada Furniture Manufacturers, Ltd., Woodstock, Ont.

CARRIERS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

CARRIERS, box and barrel

*Canadian Mathews Gravity Carrier Co., Limited, Toronto.

CARRIERS, brick

*Canadian Mathews Gravity Carrier Co., Limited, Toronto.

*Richards-Wilcox Canadian Co., Ltd., London, Ont.

CARS

*Canadian Car & Foundry Co., Ltd., Montreal, Que.
 *National Steel Car Co., Limited, Hamilton, Ont.

CARS, industrial

*Sheldons, Ltd., Galt.

CARTONS, lithographed

Harris Lithographing Co., Toronto.

CASTINGS

*Tallman Brass & Metal Co., Hamilton, Ont.

CASTINGS, aluminum

*Booth-Coulter Copper & Brass Co., Limited, Toronto.

CASTINGS, brass

*Tallman Brass & Metal Co., Hamilton, Ont.
 *Booth-Coulter Copper & Brass Co., Limited, Toronto.

CASTINGS, brass and bronze

*Tallman Brass & Metal Co., Hamilton, Ont.

CASTINGS, grey iron

*Dodge Mfg. Co., Toronto.
 *Canadian Car & Foundry Co., Ltd., Montreal, Que.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

*Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.

John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.

CASTINGS, malleable iron

*Galt Malleable Iron Co., Ltd., Galt, Ont.
 *Pratt & Letchworth Co., Brantford, Ont.

CASTINGS, steel

*Canadian Steel Foundries, Ltd., Montreal, Que.
 *Dominion Steel Foundry Co., Ltd., Hamilton, Ont.

*Hull Iron and Steel Foundry, Ltd., Hull, P.Q.

*Joliette Steel Co., Ltd., Montreal.

*Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.

CATALOGUE MAKERS

Grip, Ltd., Toronto.

R. G. McLean, Toronto.

CAUSTIC SODA

Canadian Salt Co., Ltd., Windsor, Ont.

CELLBOARD

Adams Cellboard Co., Toronto, Ont.

CEMENT GUNS

Steel and Radiation, Ltd., Toronto.

CHAIN, silent drive

*Canadian Link Belt Co., Toronto.

CHAIRS

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

CHAIRS, assembly hall

Stratford Mfg. Co., Ltd., Stratford, Ont.

CHAIRS, folding

Stratford Mfg. Co., Ltd., Stratford, Ont.

CHAIRS, rattan and upholstered

Imperial Rattan Co., Ltd., Stratford, Ont.

CHEMICALS

*Cosmos Chemical Co., Port Hope.

*The Grasselli Chemical Co., Ltd., Toronto.

*The Nichols Chemical Co., Ltd., Montreal, Que.

CHEMICAL LABORATORY

APPARATUS
 The Geo. M. Hendry Co., Limited, Toronto.

CHICLETS AND CHEWING GUM

Canadian Chewing Gum Co., Ltd., Toronto.

CIGARS

Ed. Youngheart & Co., Limited, Montreal, Que.

CIGARETTES AND TOBACCO

Philip Morris & Co., Limited, Montreal, Que.

CIRCULAR CUTTERS, solid steel

The Peter Hay Knife Co., Limited, Galt, Ont.

CLAM SHELL BUCKETS

*M. Beatty & Sons, Ltd., Welland, Ont.

CLOCKS, TIME

*International Time Recording Co. of Canada, Ltd., Toronto.

CLOCKS, WATCHMEN'S

*The General Fire Equipment Co., Limited, Toronto.

CLOSET SEATS

*Goderich Organ Co., Goderich, Ont.

CLOTHING

John W. Peck & Co., Ltd., Montreal, Que.

Mackenzie & Co., Ottawa, Ont.

CLOTHING, leather and sheepskin lined coats

*A. R. Clarke & Co., Ltd., Toronto.

CLOTHING, Mackinaw

The Carss Mackinaw Clothing Co., Ltd., Orillia, Ont.

CLOTHES LINES, cotton

Hamilton Cotton Co., Hamilton, Ont.

CLUTCHES

*Dodge Mfg. Co., Ltd., Toronto.

CLUTCHES, conveyors

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

COAL

*Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N.S.
 Standard Fuel Co., Toronto.

COBALT OXIDE

The Coniagas Reduction Co., Ltd., St. Catharines, Ont.

COCOA AND CHOCOLATE PREPARATIONS

Walter Baker & Co., of Canada, Ltd., Montreal, Que.

COFFEE

S. H. Ewing & Sons, Montreal, Que.

COLD DRAWN SHAPES, flats, squares and hexagons

*The Canadian Drawn Steel Co., Ltd., Hamilton, Ont.

*Union Drawn Steel Co., Limited, Hamilton, Ont.

COLD STORAGE DOORS

John Hillock & Co., Ltd., Toronto.

COLLAR BUTTONS

The Arlington Co. of Canada, Ltd., Toronto.

COLLARS

The Standard Shirt Co., Limited, Montreal, Que.

COLLARS, coated linen

Parsons & Parsons Canadian Co., Hamilton, Ont.

COLORS

Brandram-Henderson, Limited, Montreal, Que.

A. Ramsay & Son Co., Montreal, Que.

COMBS, fine dressing and name

The Arlington Co. of Canada, Ltd., Toronto.

COMMERCIAL STATIONERS

Rolph & Clark, Ltd., Toronto.

COMMERCIAL STATIONERY

*Brown Bros., Ltd., Toronto.

CONCENTRATORS

*Jenckes Machine Co., Sherbrooke, Que.

CONCRETE COATINGS, PAINTS, ETC.

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

The Imperial Varnish & Color Co., Limited, Toronto.

CONDUITS FOR INTERIOR**WIRING**

*Conduits Company, Ltd., Toronto.

CONFECTIONERY

Ganong Bros., Ltd., St. Stephens, N.B.
Moirs, Limited, Halifax, N.S.
The Montreal Biscuit Co., Montreal, Que.

CONTAINER BOARD—strong container

Bathurst Lumber Co., Ltd., Bathurst, N.B.

CONTRACTORS' PLANT

*M. Beatty & Sons, Ltd., Welland, Ont.

CONVEYORS

*Canadian Mathews Gravity Carrier Co., Toronto.
*Dodge Mfg. Co., Ltd., Toronto.
*Jenckes Machine Co., Sherbrooke, Que.

COPPER

*Eugene F. Phillips, Electrical Works, Limited, Montreal.
*Booth-Coulter Copper & Brass Co., Limited, Toronto.

COPPER SHEETS AND PLATES

*Booth-Coulter Copper & Brass Co., Limited, Toronto.
*Tallman Brass & Metal Co., Hamilton, Ont.

COPPERSMITHS

*Booth-Coulter Copper & Brass Co., Limited, Toronto.

COPPER TUBING, seamless

Canadian Seamless Wire Co., Ltd., Toronto.
*Booth-Coulter Copper & Brass Co., Limited, Toronto.

COPPER WIRE

Canadian Seamless Wire Co., Ltd., Toronto.

CORKS

S. H. Ewing & Sons, Montreal, Que.

CORK CARPET

Dominion Oil Cloth Co., Ltd., Montreal, Que.

CORRUGATED PAPER BOXES

Adams Cellboard Co., Toronto.
*Hinde & Dauch Paper Co., Toronto.
*Martin Corrugated Paper & Box Co., Limited, Toronto.
*The Thompson & Norris Co. of Canada, Ltd., Niagara Falls, Ont.

CORSETS

Dominion Corset Co., Quebec, Que.

COTTONS

*Dominion Textile Co., Limited, Montreal, Que.
*Montreal Cottons, Ltd., Valleyfield, P.Q.

COTTONADES

Hamilton Cotton Co., Hamilton, Ont.

COUPLERS

*Canadian Steel Foundries, Ltd., Welland, Ont.

CRANES

*Northern Crane Works, Walkerville, Ont.

CRANES, locomotive

*Canadian Link Belt Co., Toronto.

COUPLINGS

*Dodge Mfg. Co., Ltd., Toronto.

CRANKSHAFTS

Canada Forge Co., Ltd., Welland, Ont.

CREAM CHEESE, Ingersoll

The Ingersoll Packing Co., Limited, Ingersoll, Ont.

CREAM SEPARATORS AND MILK CLARIFIERS

De Laval Dairy Supply Co., Peterboro, Ont.

CREAMERY AND CHEESE FACTORY MACHINERY AND SUPPLIES

De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

CREOSOTED MATERIALS

*Paterson Mfg. Co., Toronto and Montreal.

CRUSHED STONE

The Hagersville Contracting Co., Limited, Hagersville, Ont.

CRUSHING ROLLS

*Jenckes Machine Co., Sherbrooke, Que.

CUPOLAS

*Sheldons, Ltd., Galt, Ont.
*Northern Crane Works, Limited, Walkerville, Ont.

CUPS, presentation

Standard Silver Co., Toronto.

CUPS, grease and oil

*The Canadian Winkley Co., Ltd., Windsor, Ont.

CURLED HAIR

*Delany and Pettit, Ltd., Toronto.

CURTAINS, chenille

Hamilton Cotton Co., Hamilton, Ont.

CUTLERY

Standard Silver Co., Toronto.

CUTTERS, (Machine)

*Pratt & Whitney Co., Dundas.

DENIMS

Hamilton Cotton Co., Hamilton, Ont.

DERAILS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

DESIGNERS

Ontario Engraving Co., Hamilton, Ont.

DESIGNERS AND PRINTERS OF BOOKLETS, ETC.

Grip, Ltd., Toronto.

DESKS

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

DINING ROOM SUITES

The George McLagan Furniture Co., Limited, Stratford, Ont.

DIES

*Butterfield & Co., Rock Island, P.Q.
*Pratt & Whitney Co., Dundas.

DISINFECTING APPARATUS

Spramotor Co., London, Ont.

DOOR HANGERS

*Richards Wilcox Canadian Co., Ltd., London, Ont.

DRAPEY AND UPHOLSTERY GOODS

Daly & Morin, Montreal, Que.

DREDGES

*M. Beatty & Sons, Limited, Welland, Ont.

DRESSING, belt

Sadler & Haworth, Montreal, Que.

DRESS AND CLOAK TRIMMINGS

J. Henry Peters Co., 1 Mincing St., Toronto.

DRILLS

*John Morrow Screw & Nut Co., Limited, Ingersoll, Ont.

*Pratt & Whitney Co., Dundas.

DRILLS, rock

*Canadian Ingersoll Rand Co., Sherbrooke, Que.

*Jenckes Machine Co., Sherbrooke, Que.

DRIFT BOLTS OR SPIKES

London Rolling Mill Co., Limited, London, Ont.

DROP FORGINGS

*Canadian Billings & Spencer, Ltd., Welland, Ont.

DRUMS, steel, and containers

*Smart-Turner Machine Co., Ltd., Hamilton, Ont.

DRY CELLS, electric

Canadian Carbon Co., Limited, Toronto.

DRY COLORS

P. D. Dods & Co., Ltd., Montreal, Que.

The Imperial Varnish & Color Co., Limited, Toronto.

R. C. Jamieson & Co., Ltd., Montreal, Que.

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

DUMB WAITERS

Turnbull Elevator Mfg. Co., Toronto.

DURABLE WIRE ROPE

The Dominion Wire Rope Co., Ltd., Montreal, Que.

DYNAMITE

Canadian Explosives, Limited, Montreal, Que.

DYNAMOS

Consolidated Electric Co., Limited, Toronto.

*Jones & Moore Electric Co., Ltd., Toronto.

*The Canadian Crocker-Wheeler Co., Limited, St. Catharines, Ont.

DYNAMOS, plating

*Jones & Moore Electric Co., Ltd., Toronto.

EIDERDOWN

Galt Knitting Co., Ltd., Galt.

ELECTRIC APPLIANCES

*Canadian Crocker-Wheeler Co., Limited, St. Catharines, Ont.

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

ELECTRICAL COMPOUNDS

Standard Paint Co. of Canada, Ltd., Montreal, Que.

ELECTRICAL AND GAS FIXTURES

The Garth Co., Montreal, Que.

The James Morrison Brass Mfg. Co., Limited, Toronto.

*Tallman Brass and Metal Co., Hamilton, Ont.

ELECTRIC LAMPS

Packard Electric Co., Limited, Toronto.

ELECTRIC PLATE WARE

Roden Bros., Ltd., Toronto.

ELECTRIC BATTERIES

Canadian Carbon Co., Limited, Toronto.

ELECTROTYPING

Central Press Agency, Toronto.

ELECTRICAL SUPPLIES

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

*Jones & Moore Electric Co., Ltd., Toronto.

*Northern Electric Co., Limited, Montreal, Que.

ELECTRO-SILVER PLATED WARE

Standard Silver Co., Toronto.

ELEVATING MACHINERY

*Canadian Mathews Gravity Carrier Co., Toronto.

ELEVATORS

*Jenckes Machine Co., Sherbrooke, Que.

Turnbull Elevator Manufacturing Company, Toronto.

*The Watrous Engine Works Co., Ltd., Brantford, Ont.

*Northern Crane Works, Limited, Walkerville, Ont.

ELEVATORS FOR ALL PURPOSES

*The Watrous Engine Works Co., Limited, Brantford, Ont.

ELEVATOR GATES AND DOORS

Turnbull Elevator Mfg. Co., Ltd., Toronto.

ELEVATOR GUARDS

*The Geo. B. Meadows, Toronto

Iron and Brass Goods Works Co., Limited, Toronto.

*Canada Wire and Iron Works, Hamilton, Ont.

*Elevators, hydraulic and electric

John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.

EMERY DRESSERS AND STANDS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

EMERY GRINDERS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

EMERY WHEELS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

EMERY WHEEL GUARDS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

ENAMELS

R. C. Jamieson & Co., Limited, Montreal, Que.

*Enamel Manufacturers and Decorators

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

ENAMEL AND TIN WARE

McClary Mfg. Co., London, Ont.

ENGINES

*E. Leonard & Sons, London, Ont.

*Goldie & McCulloch Co., Limited, Galt, Ont.

J. & R. Weir, Montreal, Que.

*Jenckes Machine Co., Sherbrooke, Que.

*Polson Iron Works, Limited, Toronto.

*Sheldons, Ltd., Galt, Ont.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

*Massey-Harris Co., Ltd., Toronto.

*Engines, gas and gasoline

*Gold-Shapley-Muir Co., Limited, Brantford, Ont.

*Engines, gasoline, tractor, plowing and threshing

*Sawyer-Massey Co., Ltd., Hamilton, Ont.

ENGINES, hoisting

*M. Beatty & Sons, Welland, Ont.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

ENGINES, steam plowing and threshing

Sawyer-Massey Co., Limited, Hamilton, Ont.

ENGRAVERS

Grip, Limited, Toronto.

Ontario Engraving Co., Hamilton, Ont.

Rolph & Clark, Limited, Toronto

Stone, Limited, Toronto.

ENGRAVERS, half-tone

Grip, Limited, Toronto.

Ontario Engraving Co., Hamilton, Ont.

ENGRAVERS, wood

Ontario Engraving Co., Hamilton, Ont.

ENGRAVERS AND PRINTERS

steel plate

American Bank Note Co., Ottawa, Ont.

ENGRAVERS AND PRINTERS

banknote

American Bank Note Co., Ottawa, Ont.

ENGRAVING

*J. L. Jones Engraving Company, Toronto.

ENGRAVING, copper and steel

plate

Pritchard-Andrews Co. of Ottawa, Limited, Ottawa, Ont.

ENSILAGE AND STRAW CUTTERS

J. Fleury's Sons, Aurora, Ont.

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

ENVELOPES

Barber-Ellis Co., Ltd., Toronto.

Canada Envelope Co., Montreal, Que.

EXCELSIOR

*Delany & Pettit, Ltd., Toronto.

EXCELSIOR PADS

*Delany & Pettit, Ltd., Toronto.

Parmenter & Bulloch Co., Limited, Gananoque, Ont.

EXPERTS IN PATENT CAUSES

Ridout & Maybee, Toronto.

EXPLOSIVES, high

Canadian Explosives Ltd., Montreal, Que.

FACE PLATE JAWS

Ker & Goodwin, Brantford, Ont.

*Factory Supplies, cheese and creamery

De Laval Dairy Supply Co., Ltd., Montreal, Que.

J. Henry Peters Co., 1 Mincing St., Toronto.

FANS

*Sheldons, Limited, Galt, Ont.

FASTENERS, belt

*Sadler & Haworth, Montreal, Que.

FELTS, PULP AND PAPER**MAKERS**

Ayers Limited, Lachute Mills, P.Q.

FENCES AND GATES

*Dennis Wire & Iron Works Co., London, Ont.

*Canada Wire and Iron Works, Hamilton, Ont.

*Fencing and Gates, woven wire

Banwell-Hoxie Wire Fence Co., Hamilton, Ont.

*Canada Wire and Iron Goods Co., Hamilton, Ont.

FENCING, wire

C. H. Johnson & Sons, Limited, Montreal, Que.

FIBRE PAIS

*The E. B. Eddy Co., Ltd., Hull, Que.

FIBRE, vulcanized

*Beveridge Paper Co., Ltd., Montreal.

FILES

Henry Disston & Sons, Limited, Toronto.

*The Nicholson File Co., Port Hope, Ont.

FILING CABINETS

*Office Specialty Co., Newmarket, Ont.

*Filing Equipment, wood & steel

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

FILING SYSTEMS

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

FIRE ALARMS

*Northern Electric Co., Limited, Montreal, Que.

FIRE ENGINES

*R. S. Bickle Co., Winnipeg and Woodstock.
*The Watrous Engine Works Co., Limited, Brantford, Ont.

FIRE ESCAPES

*Canada Wire and Iron Goods Co., Hamilton, Ont.
*Dennis Wire & Iron Works Co., London, Ont.

FIRE EXTINGUISHERS

*R. S. Bickle Co., Woodstock.
*A. B. Ormsby Co., Ltd., Toronto.
*Booth-Coulter Copper and Brass Co., Limited, Montreal, Que.
*The General Fire Equipment Co., Limited, Toronto, Ont.

FIRE FIGHTING APPARATUS

*R. S. Bickle Co., Winnipeg and Woodstock.
*The Watrous Engine Works Co., Limited, Brantford, Ont.

FIRE HOSE

*Canadian Consolidated Rubber Co., of Canada, Limited, Montreal, Que.
*Gutta Percha and Rubber, Ltd., Toronto.

FIRE PREVENTION MATERIAL

*Chicago Bridge & Iron Works, Bridgeburg, Ont.
*Eureka Mineral Wool & Asbestos Co., Toronto.
*The General Fire Equipment Co., Limited, Toronto.

FIRE PROOF WINDOWS AND DOORS

*A. B. Ormsby Co., Ltd., Toronto.
*Pedlar People, Ltd., Oshawa, Ont.
*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

FIRE SPRINKLER SYSTEMS

*Chicago Bridge & Iron Works, Bridgeburg, Ont.
*The General Fire Equipment Co., Limited, Toronto.
*Purdy Mansell Co., Toronto.
*H. G. Vogel Co., Montreal, Que.

FIRE AND WATER DEPARTMENT SUPPLIES

*Chicago Bridge & Iron Works, Bridgeburg, Ont.
*The Garth Co., Montreal, Que.

FISH, Atlantic Sea-Foods

Maritime Fish Corporation Ltd., Montreal, Que.

FITTINGS FOR SOIL PIPE

Anthes Foundry, Ltd., Toronto.

FITTINGS, steam

Warden King, Ltd., Montreal, Que.

FLAGS

*Scythes & Co., Limited, Toronto.

FLASHLIGHTS

Canadian Carbon Co., Toronto.

FLOORING, hardwood

Seaman Kent Co., Ltd., Meaford, Ont.

FLUE LINERS

Standard Clay Products, Ltd., St. Johns, Que.

FORGES

*Sheldons, Limited, Galt, Ont.

FORGINGS

Canada Forge Co., Ltd., Welland, Ont.

*The Steel Co. of Canada, Limited, Hamilton, Ont.

FORGINGS, drop

*Dominion Forge and Stamping Co., Walkerville, Ont.

FOUNDRY EQUIPMENT

*Northern Crane Works, Limited, Walkerville, Ont.

FOUNTAIN FRUITS and Juices

J. J. McLaughlin, Ltd., Toronto.

FRICITION CLUTCH PULLEYS

*Dodge Mfg. Co., Ltd., Toronto.

FROGS AND CROSSINGS, manganese

Canadian Ramapo Iron Works, Ltd., Niagara Falls, Ont.

FUEL

Standard Fuel Co., Toronto.

FUR GARMENTS, men's and women's

Holt, Renfrew, Ltd., Quebec.

FUR GOODS

John W. Peak & Co., Limited, Montreal, Que.

FUR TRIMMINGS, ornaments and buttons

J. Henry Peters Co., 1 Mincing St., Toronto.

FURNACES

McClary Mfg. Co., London, Ont.

The Jas. Smart Mfg. Co., Limited, Brockville, Ont.

FURNACES, hot air

Bedford Stove Co., Bedford, Que.

FURNACES, oil burning

*Canadian Hoskins Co., Walkerville, Ont.

*Mechanical Engineering Works, Montreal, Que.

FURNITURE, hall

The George McLagan Furniture Co., Limited, Stratford, Ont.

FURNITURE, office

The Canadian Office and School Furniture Co., Ltd., Preston, Ont.

FURNITURE, reed and rattan

Imperial Rattan Co., Ltd., Stratford, Ont.

FUSES

*Economy Fuse and Mfg. Co., Montreal.

GALVANIZED IRON

*A. C. Leslie & Co., Montreal.

GALVANIZED SHEETS

*Dominion Sheet Metal Co., Hamilton, Ont.

GALVANIZERS

Acme Stamping & Tool Works, Ltd., Hamilton, Ont.

*Ontario Wind Engine and Pump Co., Limited, Toronto.

GASOLINE ENGINES

*Ontario Wind & Pump Co., Ltd., Toronto.

De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

GASOLINE FIRE ENGINES

*The Watrous Engine Works Co., Ltd., Brantford, Ont.

GASOLINE MOTORS, "Imperial" Marine

Bruce Stewart & Co., Ltd., Charlottetown, P.E.I.

GASOLINE, storage systems

*Steel Trough and Machine Co., Ltd., Tweed, Ont.

GASOLINE STORAGE SYSTEMS, special underground

S. F. Bowser & Co., Toronto.

GASOLINE

*The Imperial Oil Co., Limited, Toronto.

GEARS, cut

*Hamilton Gear & Machine, Toronto.

GENERATORS

*Canadian Crocker-Wheeler Co., Ltd., St. Catharines, Ont.

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

GINs

The Melchers Gin & Spirits Distillery Co., Ltd., Montreal, Que.

GLASSWARE

Dominion Glass Co., Limited, Montreal, Que.

GLASSWARE, cut

Roden Bros., Ltd., Toronto.

GLASS FOR BUILDINGS

Toronto Plate Glass Importing Co., Limited, Toronto.

GLASS BENDERS

Toronto Plate Glass Importing Co., Limited, Toronto.

GLASS, mirror

Toronto Plate Glass Importing Co., Limited, Toronto.

GLOVES AND MITTS

*A. R. Clarke & Co., Ltd., Toronto.

Craig, Cowan Co., Ltd., Toronto.

GLUE

Canada Glue Co., Ltd., Brantford.

*Delany and Pettit, Ltd., Toronto.

GOLD-FILLED WIRE AND PLATE

Canadian Seamless Wire Co., Toronto.

GOLD AND SILVER REFINERS

Canadian Seamless Wire Co., Toronto.

GRAIN CRUSHERS (Rapid Easy)

J. Fleury's Sons, Aurora, Ont.

GRAPE JUICE

J. J. McLaughlin, Ltd., Toronto.

The Welch Co., Ltd., St. Catharines.

GRATES

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

GRAVITY CARRIERS

*Canadian Mathews Gravity Carrier Co., Toronto.

GRILLES, metal

*Canada Wire & Iron Goods Co., Hamilton, Ont.

*Dennis Wire & Iron Works Co., London, Ont.

GRINDERS, Pedestal and Bench

*Canadian Hart Wheels, Limited, Hamilton, Ont.

GRINDING and Polishing Machinery

*Canadian Hart Wheels, Limited, Hamilton, Ont.

GRINDING WHEELS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

*The Dominion Abrasive Wheel Co., Limited, New Toronto.

GRINDSTONES

*Richards-Wilcox Canadian Co., Limited, London, Ont.

GUNN SECTIONAL BOOKCASES

The Geo. McLagan Furniture Co., Limited, Stratford, Ont.

GUY ANCHORS

B. J. Coghlin Co., Ltd., Montreal.

GYPsUM, crushed

*Albert Mfg. Co., Hillsborough, N.B.

GYPsUM PRODUCTS

*Manitoba Gypsum Co., Ltd., Winnipeg, Man.

De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

HALL FURNITURE

The Geo. McLagan Furniture Co., Limited, Stratford, Ont.

HAMS

F. W. Fearman Co., Ltd., Hamilton, Ont.

HANDLES (Axe, pick, sledge hammers, etc.)

The Lachute Shuttle Co., Limited, Lachute Mills, P.Q.

HANGERS

*Dodge Mfg. Co., Ltd., Toronto.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

HARDWARE

*Richards-Wilcox Canadian Co., Limited, London, Ont.

Taylor-Forbes Co., Limited, Guelph, Ont.

The Jas. Smart Mfg. Co., Limited, Brockville, Ont.

HARDWOOD FLOORING

Wilson Bros. Limited, Collingwood, Ont.

HARDWOOD INTERIOR FINISH

Wilson Bros., Ltd., Collingwood, Ont.

HARDWOOD VENEER DOORS TO DETAIL

Wilson Bros., Ltd., Collingwood, Ont.

HARNESSES

Lamontagne Ltd., Montreal, Que.

HATS, men's straw

The Crown Hat Co., Limited, Galt, Ont.

HATS, ladies' and children's straw

The Crown Hat Co., Limited, Galt, Ont.

HATS, ladies' and children's felt and beaver

The Crown Hat Co., Limited, Galt, Ont.

HATS, ladies' felt and straw

Toronto Hat Mfg. Co., Toronto.

HAULAGE, Wire Rope

The Dominion Wire Rope Co., Ltd., Montreal, Que.

HEATERS

*Watrous Engine Works Co., Ltd., Brantford, Ont.

HEATERS, feed water

*Darling Bros., Ltd., Montreal.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

HEATING APPLIANCES

*C. A. Dunham Co., Ltd., Toronto.

*Darling Bros., Ltd., Montreal.

*Sheldons, Limited, Galt, Ont.

HEATING SYSTEMS

*C. A. Dunham Co., Ltd., Toronto.

HESSIANS

The Canadian Bag Co., Limited, Montreal, Que.

*Scythes & Co., Limited, Toronto.

HINGES

*The Steel Co. of Canada, Limited, Hamilton, Ont.

HOISTS

*M. Beatty & Sons, Ltd., Welland, Ont.

*Northern Crane Works, Limited, Walkerville, Ont.

HOISTS, electric and pneumatic

*M. Beatty & Sons, Ltd., Welland, Ont.

*Canadian Link Belt Co., Toronto.

*Northern Crane Works, Limited, Walkerville, Ont.

HOISTING MACHINERY

*M. Beatty & Sons, Ltd., Welland, Ont.

*Northern Crane Works, Limited, Walkerville, Ont.

HOSE, fire

*Canadian Consolidated Rubber Co., Limited, Montreal, Que.

HOSE, half, Imperial

Kingston Hosiery Co., Ltd., Kingston, Ont.

HOSE, rubber

*Canadian Consolidated Rubber Co., Limited, Montreal, Que.

*Gutta Percha & Rubber, Limited.

HYDRAULIC PRESSES

*Bawden Machine Co., Limited, Toronto.

*William R. Perrin, Ltd., Toronto.

ICE CREEPERS

Parmenter & Bulloch Co., Limited, Gananoque, Ont.

ICE-MAKING MACHINERY

The Linde Canadian Refrigeration Co., Limited, Montreal, Que.

INCUBATORS & BROODERS

Lee Mfg. Co., Ltd., Pembroke, Ont.

INJECTORS, automatic and autopoitive

Penberthy Injector Co., Limited, Windsor, Ont.

INTERLOCKING RUBBER TILING

*Gutta Percha & Rubber Mfg. Co., of Toronto, Limited, Toronto.

INVERTS

Standard Clay Products, Ltd., St. Johns, Que.

IRON

*Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N.S.

IRON AND STEEL BARS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

IRON, refined bar

Starr Mfg. Co., Ltd., Dartmouth, N.S.

IRON STAIRWAYS

*Canada Wire & Iron Goods Co., Hamilton, Ont.

*Dennis Wire & Iron Works Co., London, Ont.

IRONWORK, architectural

*Canada Wire & Iron Goods Co., Hamilton, Ont.

IRONWORK, ornamental

*Canada Wire & Iron Goods Co., Hamilton, Ont.

IRON, LEAD AND PUTTY

A. R. Whittall, Montreal, Que.

JAM, canned goods, etc.

E. D. Smith & Son, Limited.

JAPANS, enamels, etc.

A. Muirhead Co., Ltd., Toronto.

JOINTERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

JELLY POWDER

S. H. Ewing & Sons, Montreal, Que.

JEWELRY, enamelled souvenir

Caron Bros., Montreal, Que.

JEWELRY, gold-filled

Caron Bros., Montreal, Que.

JOIST HANGERS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

KELSEY WARM AIR GENERATOR

The Jas. Smart Mfg. Co., Limited, Brockville, Ont.

KILNS

*Sheldons, Limited, Galt, Ont.

KINDLING

Standard Fuel Co., Toronto.

KNIFE GRINDERS

*W. H. Banfield & Sons, Toronto.

KNITTED GOODS

*Penman's, Limited, Paris, Ont.

KNIVES

Henry Disston and Sons, Toronto.
The Peter Hay Knife Co., Limited, Galt, Ont.
Simonds Canada Saw Co., Limited, Montreal, Que.

KNIVES, pulp and paper

Henry Disston and Sons, Toronto.
The Peter Hay Knife Co., Limited, Galt, Ont.

KODAKS AND PHOTOGRAPHIC SUPPLIES

Canadian Kodak Co., Ltd., Toronto.

LABELS

Lawson & Jones, Ltd., London, Ont.

LABELS, lithographed

Harris Lithographing Co., Toronto.

LACE LEATHER

F. C. McCordick, St. Catharines, Ont.

*Sadler & Haworth, Montreal, Que.

*The D. K. McLaren Belting Co., Limited, Montreal, Que.

*The J. C. McLaren Belting Co., Limited, Montreal, Que.

LADDERS

Stratford Mfg. Co., Ltd., Stratford, Ont.

LADDERS, step.

*Otterville Mfg. Co., Ltd., Otterville, Ont.

LADLES, foundry

*Northern Crane Works, Limited, Walkerville, Ont.

LAGER

E. L. Drewry, Winnipeg, Man.

LARD

F. W. Fearman Co., Ltd., Hamilton, Ont.

LATH

The C. Beck Mfg. Co., Ltd., Penetanguishene, Ont.

LATHE CHUCKS

Ker & Goodwin, Brantford, Ont.

LATHE-DOGS

Canadian Billings & Spencer, Ltd., Welland, Ont.

LAUNCHES

Peterboro Canoe Co., Ltd., Peterboro, Ont.

LAWN MOWERS

Taylor-Forbes Co., Limited, Guelph, Ont.

LAWN SWINGS

Stratford Mfg. Co., Ltd., Stratford, Ont.

LAVATORIES, enameled

Amherst Foundry Co., Limited, Amherst, N.S.

LAUNDRY SINKS

Amherst Foundry Co., Limited, Amherst, N.S.

LEAD

*The Consolidated Mining and Smelting Co. of Canada, Limited, Trail, B.C.

LEAD GRINDERS

Benjamin Moore & Co., Limited, Toronto.

LEAD SHEET

Toronto Plate Glass Importing Co., Limited, Toronto.

LEAD PIPE

*The Steel Co. of Canada, Limited, Hamilton, Ont.

Toronto Plate Glass Importing Co., Limited, Toronto.

*The Canada Metal Co., Toronto.

LEATHER

The Robson Leather Co., Limited, Oshawa, Ont.

LEATHER, bookbinders'

Clarke & Clarke, Ltd., Toronto.

LEATHER, fancy

Clarke & Clarke, Ltd., Toronto.

LEATHER GOODS

Lamontagne, Ltd., Montreal, Que.

LEATHER, hemlock sole

The Breithaupt Leather Co., Ltd., Berlin, Ont.

LEATHER, patent colt and side leather

*A. R. Clarke & Co., Ltd., Toronto.

LEATHER, sheep skin, etc.

Clarke & Clarke, Ltd., Toronto.

LEATHER, upholstering

Clarke & Clarke, Ltd., Toronto.

LEATHER, upper

A. Davis & Son, Ltd., Kingston, Ont.

LINK BELTING

*Canadian Link Belt Co., Toronto.

*The Dodge Mfg. Co., Ltd., Toronto.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

LINOLEUM

Dominion Oil Cloth Co., Limited, Montreal, Que.

LITHOGRAPHED BUSINESS STATIONERY

Business Systems, Ltd., Toronto.

LITHOGRAPHED TIN WARE

*MacDonald Mfg. Co., Limited, Toronto.

LITHOGRAPHERS

American Bank Note Company, Ottawa, Ont.

Harris Lithographing Co., Toronto.

Stone, Limited, Toronto.

Rolph & Clark, Limited, Toronto.

LOCKERS

*Canada Wire & Iron Works Co., Hamilton, Ont.

*Dennis Wire & Iron Works Co., London, Ont.

*Geo. B. Meadows, Wire, Iron and Brass Works Co., Toronto.

LOCOMOTIVE BLOCKS

Standard Clay Products, Limited, St. Johns, Que.

LOCOMOTIVES, industrial

*Montreal Locomotive Works, Ltd., Montreal, Que.

LOCOMOTIVE & MARINE BRASS WORKS

The James Morrison Brass Mfg. Co., Limited, Toronto.

LOOSE LEAF, BINDERS AND FORMS

Business Systems, Ltd., Toronto.

LOOSE LEAF SYSTEMS

Copeland-Chatterton Co., Limited, Brampton, Ont.

LOOSE LEAF SUPPLIES

The Esdale Press, Ltd., Edmonton.

LUBRICATORS, steam sight feed

Penberthy Injector Co., Limited, Windsor, Ont.

LUGS, for silos and water tanks

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

*Otterville Mfg. Co., Ltd., Otterville, Ont.

LUMBER

The C. Beck Mfg. Co., Ltd., Penetanguishene, Ont.

G. & J. Esplen, Montreal, Que.

LUMBER, asbestos

*Eureka Mineral Wool & Asbestos Co., Toronto.

LUMBER, spruce and pine, cedar railway ties and shingles

Bathurst Lumber Co., Ltd., Bathurst, N.B.

LUMBERING BLANKETS

Slingsby Mfg. Co., Ltd., Brantford, Ont.

LUMBER, red pine and spruce

Gillies Bros., Ltd., Braeside, Ont.

LUMBER, spruce, fir, larch and cedar

Fernie Lumber Co., Ltd., Fernie, B.C.

LUMBER, white pine

Gillies Bros., Ltd., Braeside, Ont.

MACHINE TOOLS

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, conveying

*Canadian Link Belt Co., Toronto.

*Canadian Mathews Gravity Carrier Co., Limited, Toronto.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

MACHINERY, flour mill

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

MACHINERY, grinding

*Canadian Hart Wheels, Limited, Hamilton, Ont.

MACHINERY, hoisting, etc.

*Polson Iron Works, Limited, Toronto.

J. & R. Weir, Montreal, Que.

*M. Beatty & Sons, Ltd., Welland, Ont.

*Northern Crane Works, Limited, Walkerville, Ont.

MACHINERY, ice cream

J. J. McLaughlin, Ltd., Toronto.

MACHINERY, iron working

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, pulp mill

*The Watrous Engine Works Co., Limited, Brantford, Ont.

MACHINERY, punching and shearing

*John Bertram & Sons Co., Ltd., Dundas, Ont.

*MACHINERY, railroad and car shop

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, roadmaking

Sawyer-Massey Co., Limited, Hamilton, Ont.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

MACHINERY, sawmill

The E. Long Mfg. Co., Limited, Orillia, Ont.

P. Payette & Co., Pentanguishene, Ont.

W. P. Plant, Hastings, Ont.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

*Yates, P. B., Machine Co., Ltd., Hamilton, Ont.

*MACHINERY, sheet metal working

Brown, Boggs Co., Ltd., Hamilton, Ont.

MACHINERY, special

Bawden Machine Co., Limited, Toronto.

MACHINERY, tannery

W. P. Plant, Hastings, Ont.

MACHINERY, transmission

*Dodge Mfg. Co., Ltd., Toronto.

*Goldie & McCulloch Co., Limited, Galt, Ont.

MACHINERY, woodworking

*Yates, P. B., Machine Co., Ltd., Hamilton, Ont.

Preston Woodworking Machinery Co., Ltd., Preston.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

MACHINE WRENCHES

*Canadian Billings & Spencer, Ltd., Welland, Ont.

MACHINES, painting

Spramotor Co., London, Ont.

MAGNESITE

Canadian Carbonate Co., Limited, Montreal, Que.

MALT

*Hiram Walker & Sons, Limited, Walkerville, Ont.

MAPLE PRODUCTS

*Maples, Limited, Toronto.

MAPS AND MAP MOUNTING

The Geo. M. Hendry Co., Limited, Toronto.

MARTINGALE RINGS AND SLIDE LOOPS

The Arlington Co. of Canada, Ltd., Toronto.

MATCHERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

MATCHES

*The E. B. Eddy Co., Ltd., Hull.

MECHANICAL STOKERS

*The Jones Underfeed Stoker Co., Ltd., Toronto.

MEDICINES, patented and pharmaceutical

Dr. Ed. Morin & Cie., Ltd., Quebec.

METAL, babbit

*Canada Metal Co., Toronto.

*Tallman Brass and Metal Co., Hamilton, Ont.

Alonzo W. Spooner, Limited, Port Hope, Ont.

METAL CEILING

*Metallic Roofing Co., Limited, Toronto.

METAL LATH

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

METAL PACKING

*Garlock Packing Company, Hamilton, Ont.

METAL, spinning and stamping

The Booth-Coulter Copper and Brass Co., Limited, Toronto.

METAL SHINGLES

*The Metallic Roofing Co. of Canada, Limited, Toronto.

METAL SIDING

*The Metallic Roofing Co., Ltd., Toronto.

MILK DEALERS' MACHINERY AND SUPPLIES

De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

MILLBOARD, asbestos

*Eureka Mineral Wool & Asbestos Co., Toronto.

MILLING CUTTERS

Pratt and Whitney Company of Canada, Dundas, Ont.

*MITTS AND GLOVES (Indian, tan, red deerskins)

Holt, Renfrew Ltd., Quebec, Que.

A. R. Clarke & Co., Ltd., Toronto.

MOCCASINS AND SLIPPERS (Indian tanned leathers)

Holt, Renfrew Ltd., Quebec, Que.

MORTISERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

MOTOR CARS

*Ford Co. of Canada, Ford, Ont.

*Willis-Overland, Ltd., West Toronto.

*MOTORS, electric (alternating current)

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

Consolidated Electric Co., Limited, Toronto.

*Jones & Moore Electric Co., Ltd., Toronto.

*Canadian Crocker-Wheeler Co., Ltd., St. Catharines, Ont.

*T. & H. Electric Co., Hamilton.

*MOTORS, electric (direct current)

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

Consolidated Electric Co., Limited, Toronto.

*Jones & Moore Electric Co., Ltd., Toronto.

*T. & H. Electric Co., Hamilton.

*MOTORS, electric (repairing)

Consolidated Electric Co., Limited, Toronto.

*T. & H. Electric Co., Hamilton.

MOULDERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

NAILS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

NAILS, copper

Parmenter and Bulloch Co., Ltd., Gananoque, Ont.

NAILS, wire

Parmenter and Bulloch Co., Ltd., Gananoque, Ont.

The Graham Nail Works, Toronto.

NAPHTHA

*The Imperial Oil Co., Limited, Toronto.

NICKEL OXIDE

Coniagas Reduction Co., Limited, St. Catharines, Ont.

NUTS

*John Morrow Screw & Nut Co., Limited, Ingersoll, Ont.

*The National Acme Mfg. Co., Montreal, Que.

*The Steel Co. of Canada, Limited, Hamilton, Ont.

*OAKUM, plumbers, Canadian Navy Factory Waste and Metal Co., Montreal, Que.

*Scythes & Co., Ltd., Toronto.

OAT CRUSHERS AND FLAKERS
J. Fleury's Sons, Aurora, Ont.**OFFICE DESKS**

*Goderich Organ Co., Goderich, Ont.

OFFICE EQUIPMENT

*Office Specialty Co., Newmarket, Ont.

OFFICE FURNITURE

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

OILSBrandram-Henderson, Ltd., Montreal, Que.
A. Ramsay & Son Co., Montreal, Que.
Sherwin-Williams Co. of Canada, Limited, Montreal, Que.**OIL FILTRATION AND CIRCULATING SYSTEMS**

S. F. Bowser & Co., Toronto.

OIL STORAGE SYSTEMS, self-measuring

S. F. Bowser & Co., Toronto.

OIL COMPANIES*Canadian Oil Cos., Toronto.
Commercial Oil Co., Ltd., Hamilton, Ont.

*Imperial Oil Co., Toronto.

OILS (Petroleum products)*British American Oil Co., Limited, Toronto.
*The Imperial Oil Co., Limited, Toronto.**OILS, road**

*Paterson Manufacturing Company, Toronto and Montreal.

OILCLOTHS, floor and table

Dominion Oil Cloth Co., Limited, Montreal, Que.

ORGANS*Goderich Organ Co., Goderich, Ont.
Karn-Morris Piano and Organ Co., Ltd., Woodstock, Ont.
Thomas Organ & Piano Co., Woodstock, Ont.**ORGANS, pipe**Casavant Freres, St. Hyacinthe, Que.
Karn-Morris Piano and Organ Co., Ltd., Woodstock, Ont.**ORGANS, parlor**

*Goderich Organ Co., Goderich, Ont.

ORNAMENTAL IRON WORK*Canada Wire & Iron Goods Co., Hamilton, Ont.
*Dennis Wire & Iron Works Co., London, Ont.
*The Geo. B. Meadows, Toronto Iron and Brass Goods Works Co., Limited, Toronto.**OVENS, portable bake**Bedford Stove Co., Bedford, Que.
Mackenzie & Co., Ottawa, Ont.
Peerless Overall Co., Rock Island, Que.Walker Pant and Shirt Co., Walkerville and Chatham, Ont.
The Standard Shirt Co., Limited, Montreal, Que.**OVERCOATINGS**

Rosamond Woollen Co., Almonte, Ont.

OVERHEAD RUNWAYS

*Richards-Wileox Canadian Co., Limited, London, Ont.

OXY-ACETYLENE WELDING

*L'Air Liquide Society, Montreal.

OXYGEN

*L'Air Liquide Society, Montreal.

PACKING BOXES

Barchard & Co., Limited, Toronto.

PACKING, engine

*Garlock Packing Co., Hamilton.

PACKING, rubber*Canadian Consolidated Rubber Co., Limited, Montreal, Que.
*Gutta Percha & Rubber, Limited, Jenkins Bros., Ltd., Montreal, Que.**PAIS AND TUBS, wooden**

The C. Beck Mfg. Co., Limited, Penetanguishene, Ont.

PAINTERS' SUPPLIES

A. Muirhead Co., Ltd., Toronto.

PAINTS

R. C. Jamieson & Co., Limited, Montreal, Que.

PAINTS and VARNISHESA. Muirhead Co., Ltd., Toronto.
Benjamin Moore & Co., Limited, Toronto.

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

The Imperial Varnish & Color Co., Limited, Toronto.

The Staneland Co., Ltd., Victoria, B.C.

A. Ramsay & Sons Co., Montreal, Que.

*The Dougall Varnish Co., Limited, Montreal, Que.

Standard Paint Co. of Canada, Limited, Montreal, Que.

*Toch Bros., Toronto.

PAINTS, barn and bridge

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

*Standard Paint Co. of Canada, Limited, Montreal, Que.

*Paterson Manufacturing Company, Toronto and Montreal.

*Toch Bros., Toronto.

PAPER, book

Barber Paper & Coating Mills, Ltd., Georgetown, Ont.

PAPER BOXES

King Paper Box Co., Ltd., Montreal, Que.

*Rudd Paper Box Co., Limited, Toronto.

PAPERS, bond

*Howard Smith Paper Mills, Ltd., Montreal.

*Rolland Paper Co., Ltd., Montreal, Que.

PAPER, envelope

Provincial Paper Mills Limited, Georgetown, Ont.

The Toronto Paper Manufacturing Co., Cornwall, Ont.

*Beveridge Paper Co., Ltd., Montreal, Que.

PAPER, news

*The Riordon Pulp and Paper Co., Montreal, Que.

*Beveridge Paper Co., Ltd., Montreal, Que.

*The Riordon Pulp and Paper Co., Montreal, Que.

PAPERS, building

Bathurst Lumber Co., Ltd., Bathurst, N.B.

*The Riordon Pulp and Paper Co., Montreal, Que.

Standard Paint Co. of Canada, Ltd., Montreal, Que.

PAPER, coated, book and label

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, coated cover

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, coated box board

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, enamelled blotting

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, gummed tapes

Gummed Papers, Ltd., Brampton, Ont.

PAPER, label

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, ledger

*Howard Smith Paper Mills, Ltd., Montreal.

*Rolland Paper Co., Limited, Montreal, Que.

The Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER, super-book

The Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER, wall

Stauntons, Ltd., Toronto.

PAPER, Waxed

Business Systems, Ltd., Toronto.

PAPER, writing

The Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER, writing, high-grade

*Howard Smith Paper Mills, Ltd., Montreal.

*Rolland Paper Co., Limited, Montreal, Que.

PARK SEATS

Stratford Mfg. Co., Ltd., Stratford, Ont.

PARLOR SUNDRIES

The Geo. McLagan Furniture Co., Limited, Stratford, Ont.

PATENTS

Fetherstonhaugh & Co., Toronto.

Ridout and Maybee, Toronto.

PATENT LITIGATION

Ridout and Maybee, Toronto.

PAY ROLL AUDITS

*International Time Recording Co. of Canada, Ltd., Toronto.

PEAS AND BEANS FOR SEED

W. P. Niles, Ltd., Wellington, Ont.

PERFORATED METALS

*Canada Wire & Iron Goods Co., Hamilton, Ont.

PERFORATED MUSIC ROLLS

The Otto Higel Co., Ltd., Toronto.

PERFUMES AND TOILET PREPARATIONS

Sovereign Perfumes Ltd., Toronto.

PETROLEUM PRODUCTS

*The Imperial Oil Co., Limited, Toronto.

PHOTOMAILERS

*The Thompson & Norris Co. of Canada, Ltd., Niagara Falls, Ont.

PIANOS

Dominion Organ & Piano Co., Ltd., Bowmanville, Ont.

*Gourlay, Winter and Leeming, Toronto.

Karn-Morris Piano and Organ Co., Limited, Woodstock, Ont.

PIANO ACTIONS

The Otto Higel Co., Ltd., Toronto.

PIANO KEYS

The Otto Higel Co., Ltd., Toronto.

PIANOS, player

*Gourlay, Winter and Leeming, Toronto.

Karn-Morris Piano and Organ Co., Limited, Woodstock, Ont.

PIANO, player actions

The Otto Higel Co., Ltd., Toronto.

PIANO STOOLS and BENCHES

*Goderich Organ Co., Goderich, Ont.

PICKLES AND CATSUPS

T. A. Lytle Co., Ltd., Toronto.

PIG IRON

*The Steel Co. of Canada, Limited, Hamilton, Ont.

PINE DOORS, SASH, MOULDINGS, ETC.

Wilson Bros., Limited, Collingwood, Ont.

*PINS, society, emblems and badges

Caron Bros., Montreal, Que.

*PIPE, cast iron, for water and gas

National Iron Works, Ltd., Toronto.

PIPE COUPLINGS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

PIPE COVERINGS

*Eureka Mineral Wood & Asbestos Co., Toronto.

PIPE ORGANS

Karn-Morris Piano and Organ Co., Limited, Woodstock, Ont.

PIPES, culvert

Standard Clay Products, Ltd., St. Johns, Que.

*PIPE AND NIPPLES, black and galvanized

*Canadian Tube & Iron Co., Ltd., Montreal, Que.

PIPE, sewerHamilton and Toronto Sewer Pipe Co., Limited, Hamilton, Ont.
Standard Clay Products, Ltd., St. Johns, Que.**PIPE, soil and fittings**

Aulches Foundry, Ltd., Toronto and Winnipeg.

Warden King Lt., Montreal, Que.

PIPE AND TUBES, wrought

*Page-Hersey Iron Tube and Lead Co., Ltd., Toronto.

PIPE, threading and cutting off machines

John H. Hall & Sons, Limited, Brantford, Ont.

PISTON RODS

*The Canadian Drawn Steel Co., Limited, Hamilton, Ont.

*Union Drawn Steel Co., Limited, Hamilton, Ont.

PLANERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

PLANING MILLS

G. & J. Esplen, Montreal, Que.

PLOWS

J. Fleury's Sons, Aurora, Ont.

PLUMBERS' SUPPLIES

The Garth Co., Montreal, Que.

The James Morrison Brass Mfg. Co., Ltd., Toronto.

PLUMBING APPLIANCES

Standard Sanitary Mfg. Co., Ltd., Limited, Toronto.

PLUMBING SUPPLIES

Toronto Plate Glass Importing Co., Limited, Toronto.

PNEUMATIC MACHINERY

*Canadian Ingersoll-Rand Co., Sherbrooke, P.Q.

POLE LINE MATERIAL (wooden insulator top pins, side blocks, pole steps, cross arms)

The Lachute Shuttle Co., Limited, Lachute Mills, P.Q.

POLES, curtain

Daly & Morin, Montreal, Que.

POLES, Flag

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

*POLES, telegraph and telephone, cedar

Ferne Lumber Co., Ltd., Fernie, B.C.

*PORK PACKERS AND CHEESE EXPORTERS

The Ingersoll Packing Co., Limited, Ingersoll, Ont.

*POSTS, split cedar fence

Ferne Lumber Co., Ltd., Fernie, B.C.

POSTERS

Stone, Limited, Toronto.

POULTRY SUPPLIES AND MEDICINES

Lee Mfg. Co., Ltd., Pembroke, Ont.

POWDER, blasting

Canadian Explosives, Ltd., Montreal, Que.

POWER PRESSES

*Canadian Boomer & Boschert Press Co., Limited, Montreal, Que.

*William R. Perrin, Ltd., Toronto.

PRESERVATIVE PAINT

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

PRESSES, baling and filter

*Canadian Boomer & Boschert Press Co., Ltd., Montreal, Que.

*William R. Perrin, Ltd., Toronto.

PRESSES, hydraulic

*Canadian Boomer & Boschert Press Co., Limited, Montreal, Que.

*PRESSES, sheet metal stamping

Brown, Boggs Co., Ltd., Hamilton, Ont.

PRESSES, veneer

*William R. Perrin, Ltd., Toronto.
*Canadian Boomer & Boschert Press Co., Ltd., Montreal, Que.

PRINTERS

Rous & Mann, Ltd., Toronto.
R. G. McLean, Toronto.

PRINTERS, catalogue

R. G. McLean, Toronto.

PRINTING AND LITHOGRAPHING

Lawson & Jones, Limited, London, Ont.

PULLEYS

*Dodge Mfg. Co., Ltd., Toronto.
*The Goldie & McCulloch Co., Ltd., Galt, Ont.

PULP, bleached sulphite

The Edward Partington Pulp and Paper Co., St. John, N.B.

PULP, sulphate and sulphite

Bathurst Lumber Co., Ltd., Bathurst, N.B.

PUMPS

*Bawden Machine Co., Ltd., Toronto.
*Canadian Fairbanks-Morse Company, Limited, Montreal, Que.
*Darling Bros., Ltd., Montreal.
*Ontario Wind Engine & Pump Co., Ltd., Toronto.
*Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Sprimotor Co., London, Ont.

PUMPS, boiler feed

*Bawden Machine Co., Ltd., Toronto.
*Smart-Turner Machine Co., Ltd., Hamilton, Ont.
*The Goldie & McCulloch Co., Ltd., Galt, Ont.

PUMPS, centrifugal

*M. Beatty & Sons, Ltd., Welland, Ont.
*Smart-Turner Machine Co., Ltd., Hamilton, Ont.
*Waterous Engine Works Co., Ltd., Brantford, Ont.

PUMPS, iron

*Goold-Shapley-Muir Co., Limited, Brantford, Ont.
*Smart-Turner Machine Co., Ltd., Hamilton, Ont.
*Waterous Engine Works Co., Ltd., Brantford, Ont.

PUMPS, turbine and reciprocating

*Bawden Machine Co., Ltd., Toronto.
*Smart-Turner Machine Co., Ltd., Hamilton, Ont.
John McDougall, Caledonian Iron Works Co., Ltd., Montreal, Que.

PUNCHES

*Pratt & Whitney Co., Dundas.

PYROMETERS

*Canadian Hoskins Co., Walkerville, Ont.

RADIATORS

Taylor-Forbes Co., Limited, Guelph, Ont.
Warden King, Ltd., Montreal, Que.

RAILINGS, brass and iron

*Dennis Wire & Iron Works Co., London, Ont.

RAILWAY SIGNAL APPLIANCES

General Railway Signal Co. of Canada, Ltd., Montreal, Que.

RAILWAY SUPPLIES

*Canadian Steel Foundries, Ltd., Montreal, Que.
*Chicago Bridge & Iron Works, Bridgeburg, Ont.
B. J. Coghlin Co., Ltd., Montreal, Que.

RAILWAY TARIFF BINDERS

The Esdale Press Ltd., Edmonton.

READY-TO-WEAR GARMENTS, LADIES'

H. C. Boulter Co., Ltd., Toronto.

REAMERS

*Pratt & Whitney Co., Dundas.
*Butterfield & Co., Rock Island, P.Q.

"REDWOOD" lager

E. L. Drewry, Winnipeg, Man.

REED AND RATAN GOODS

Canada Furniture Mfgs., Limited, Woodstock, Ont.

REFRIGERATORS

Sanderson-Harold Co., Ltd., Paris, Ont.
Lee Mfg. Co., Ltd., Pembroke, Ont.

REFRIGERATING MACHINERY

The Linde Canadian Refrigeration Co., Ltd., Montreal, Que.

REFRIGERATORS, store, homes

and institutions
Ham & Nott Co., Ltd., Brantford, Ont.
John Hillock & Co., Ltd., Toronto.

REINFORCEMENT BARS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

REINFORCEMENT FOR CONCRETE

*Canada Wire & Iron Goods Co., Hamilton, Ont.

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

REVOLVING DOORS

*A. B. Ormsby Co., Ltd., Toronto.

RINGS, gold

Caron Bros., Montreal, Que.

RIVETS

*Canadian Tube & Iron Co., Ltd., Hamilton, Ont.
*The Steel Co. of Canada, Limited, Hamilton, Ont.

RIVETS, bifurcated and tubular

Parmenter & Bulloch Co., Limited, Gananoque, Ont.

RIVETS AND BURS, iron, copper

and brass
Parmenter & Bulloch Co., Limited, Gananoque, Ont.

ROLLERS, shade

Daly & Morin, Montreal, Que.

ROOFING, metal

*Metallic Roofing Co., Limited, Toronto.

ROOFING, ready to lay

Standard Paint Co. of Canada, Ltd., Montreal, Que.
*Paterson Mfg. Co., Toronto and Montreal.

ROOF TRUSSES

*The Canadian Bridge Co., Ltd., Walkerville, Ont.
*Dominion Bridge Co., Ltd., Montreal, Que.

ROPE

*Doon Twines Ltd., Doon, Ont.
*Shurly & Derrett, Ltd., Toronto.

ROPE, cotton

Hamilton Cotton Co., Hamilton, Ont.

RUBBER FOOTWEAR

Ames Holden, McCready, Limited, Montreal, Que.
*Gutta Percha & Rubber, Ltd.
The Miner Rubber Co., Limited, Granby, Que.

RUBBER GOODS

*Canadian Consolidated Rubber Co., Limited, Montreal, Que.
*Gutta Percha & Rubber, Ltd.

RUBBER MOULDS

Bawden Machine Co., Ltd., Toronto.

RUBBER PACKING

*Garlock Packing Company, Hamilton, Ont.

RULES

The Lufkin Rule Co. of Canada, Ltd., Windsor, Ont.

RYE

The St. Hyacinthe Distillery Co., Ltd., St. Hyacinthe, Que.

SADDLERY HARDWARE

*Dominion Forge and Stamping Co., Walkerville, Ont.

SAFES

*Goldie & McCulloch Co., Limited, Galt, Ont.

SAMPLE CASES

The M. Langmuir Mfg. Co. of Toronto, Ltd., Toronto.
J. Eveleigh & Co., Ltd., Montreal, Que.

SANDERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

SANDPAPER

*Delany and Pettit, Ltd., Toronto.

SASH CORD, cotton

Hamilton Cotton Co., Hamilton, Ont.

SALT

Canadian Salt Co., Ltd., Windsor, Ont.

The Dominion Salt Co., Limited, Sarnia, Ont.

SANITARY PAPER TOWELS

*E. B. Eddy Co., Ltd., Hull, Que.

SAW SHARPENING MACHINERY

*Canadian Hart Wheels, Limited, Hamilton, Ont.

SAWS

Henry Disston & Sons, Limited, Toronto.
Shurly & Deitrich, Galt, Ont.

SAWS, crosscut and band

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.
Shurly & Deitrich, Galt, Ont.

SAWS, circular mill

Shurly & Deitrich, Galt, Ont.

SAWS, hack

*Victor Saw Works, Ltd., Hamilton, Ont.

SAWS, of all kinds

Simonds Canada Saw Co., Limited, Montreal, Que.

SAWS, rip

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.
Shurly & Deitrich, Galt, Ont.

SAWMILLS

G. & J. Esplen, Montreal, Que.
*The Waterous Engine Works Co., Ltd., Brantford, Ont.

SAWS, specialties

*Victor Saw Works, Ltd., Hamilton, Ont.

SCALES

The Gurney Scale Co., Hamilton, Ont.

SCALES, counter

The Gurney Scale Co., Hamilton, Ont.

SCALES, railway track, etc.

The Gurney Scale Co., Hamilton, Ont.

SCREENS

*Canada Wire & Iron Goods Co., Hamilton, Ont.

SCREEN DOORS AND WINDOWS

Sanderson-Harold Co., Ltd., Paris, Ont.
Ham & Nott Co., Ltd., Brantford, Ont.

SCREWS

*John Morrow Screw & Nut Co., Ltd., Ingersoll, Ont.
*The National Acme Mfg. Co., Montreal, Que.
*The Steel Co. of Canada, Limited, Hamilton, Ont.

SCREW PLATES

*Butterfield & Co., Rock Island, P.Q.

SECURITIES, engraved

American Bank Note Co., Ottawa, Ont.

SERGES

Rosamond Woollen Co., Almonte, Ont.

SHAFTING

Canada Forge Co., Ltd., Welland, Ont.

*Canadian Drawn Steel Co., Ltd., Hamilton, Ont.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

*Union Drawn Steel Co., Limited, Hamilton, Ont.

*Dodge Mfg. Co., Ltd., Toronto.

SHANTY BLANKETS

Slingsby Mfg. Co., Ltd., Brantford, Ont.

SHAPERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

SHEAR BLADES, iron

The Peter Hay Knife Co., Limited, Galt, Ont.

SHEATHING

*Paterson Mfg. Co., Toronto and Montreal.

SHEATHING, asbestos corrugated

*Eureka Mineral Wool & Asbestos Co., Toronto.

SHEET METAL STAMPINGS

Acme Stamping & Tool Works, Ltd., Hamilton, Ont.

SHINGLES

Bathurst Lumber Co., Ltd., Bathurst, N.B.

SHIRTS

MacKenzie & Co., Ottawa, Ont.
John W. Peck & Co., Ltd., Montreal, Que.

SHEETS, galvanized

*Dominion Sheet Metal Co., Ltd., Hamilton.

SHIRTS, workmen's

*A. R. Clarke & Co., Ltd., Toronto.

SHOE PEGWOOD

O. Chalifour, Quebec, Que.

SHOE LININGS

Galt Knitting Co., Ltd., Galt, Ont.

SHOES, running and athletic

Ames-Holden-McCready, Ltd., Montreal, Que.

SHOOKS

Barchard & Co., Ltd., Montreal, Que.

SILVER BULLION

Coniagas Reduction Co., Ltd., St. Catharines, Ont.

SILVERSMITH

Canadian Wm. A. Rogers, Ltd., Toronto.
Standard Silver Co., Toronto.

SILVERWARE, sterling

Roden Bros., Limited, Toronto.

SINKS, enamelled

Amherst Foundry Co., Limited, Amherst, N.S.

SKATES, figure

Canada Cycle and Motor Co., Ltd., Toronto.

SKATES, genuine Acme

Canada Cycle and Motor Co., Ltd., Toronto.

SKATES, hockey

Canada Cycle and Motor Co., Ltd., Toronto.

SKATES, ice

Canada Cycle and Motor Co., Ltd., Toronto.

SKIFFS

Peterboro Canoe Co., Ltd., Peterboro, Ont.

SKYLIGHTS

*A. B. Ormsby Co., Ltd., Toronto.
*Metallic Roofing Co., Limited, Toronto.

SLEIGHS

Tudhope-Anderson Co., Limited, Orillia, Ont.

SLIPPERS

Ames-Holden-McCready, Ltd., Montreal, Que.

SMOKE CONSUMERS

*The Jones Underfeed Stoker Co., Ltd., Toronto.

SMOKE-STACKS

*Steel Trough and Machine Co., Ltd., Tweed, Ont.

SOAPS

J. Barsalou & Co., Ltd., Montreal, Que.

SOAP (soft, oil)

The Imperial Varnish & Color Co., Ltd., Toronto.
Sherwin-Williams Co. of Canada, Limited, Montreal, Que.

SODA WATER FOUNTAINS

J. J. McLaughlin, Ltd., Toronto.

SOIL PIPE

Anthes Foundry, Ltd., Toronto.

SOLDER

Alonso W. Spooner, Ltd., Port Hope, Ont.

*Canada Metal Co., Toronto.

*Tallman Brass & Metal Co., Hamilton, Ont.

SOLDER, silver

Geo. H. Lees & Co., Hamilton.

SOLDER, wire and bar

*American Can Co., Montreal, and Hamilton.

SOLDERING IRONS AND COPPERS

Brown, Boggs Co., Ltd., Hamilton, Ont.

SNOWSHOES

Holt, Renfrew, Ltd., Quebec, Que.

SPARK PLUGS

Canadian Carbon Co., Limited, Toronto.

SPIRAL CONVEYORS

*Canadian Mathews Gravity Carrier Co., Ltd., Toronto.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

SPLIT PEAS

H. Murton, Guelph, Ont.

SPIKES, railway and marine

Starr Mfg. Co., Ltd., Dartmouth, N.S.

SPIRITS

The St. Hyacinthe Distillery Co., Ltd., St. Hyacinthe, Que.
*Hiram Walker & Sons, Limited, Walkerville, Ont.

SPORTING MEDALS AND TROPHIES

Roden Bros., Limited, Toronto.

SPRAYERS

Spramotor Co., London, Ont.

SPRING COTTERS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

SPRINGS

*Canadian Steel Foundries, Ltd., Montreal, Que.
J. J. Coghlin Co., Ltd., Montreal, Que.
Guelph Spring & Axle Co., Ltd., Guelph, Ont.

SPRINGS, carriage and automobile

Guelph Spring and Axle Co., Ltd., Guelph, Ont.

SPRINKLER SYSTEMS

*Chicago Bridge & Iron Works, Bridgeburg, Ont.

*General Fire Equipment Co., Ltd., Toronto.

*Purdy, Mansell, Ltd., Toronto.

*Vogel Co. of Canada, Ltd., Montreal, Que.

SPROCKETS, gray iron and flint rim

*Canadian Link Belt Co., Toronto.

STAINS

R. C. Jamieson & Co., Ltd., Montreal, Que.

STAINS, creosote shingle

A. Muirhead Co., Ltd., Toronto.

STAMPINGS

*Dominion Forge and Stamping Co., Ltd., Walkerville, Ont.

STAMPS, steel, brass and rubber

Pritchard-Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

STAMP MILLS

*Jenckes Machine Co., Sherbrooke.

STATIONERY, office

Harris Lithographing Co., Toronto.

STEAM PIPE AND BOILER COVERINGS, asbestos

*Eureka Mineral Wool & Asbestos Co., Toronto.

STEAM SHOVELS

*M. Beatty & Sons, Ltd., Welland, Ont.

STEAM SPECIALTIES

*C. A. Dunham Co., Ltd., Toronto.

*Darling Bros., Ltd., Montreal.

*Sheldons, Ltd., Galt.

STEAM TRAPS

*C. A. Dunham Co., Ltd., Toronto.

*Canadian Morehead Manufacturing Co., Limited, Woodstock.

STEEL

*Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N.S.

STEEL BILLETS AND BLOOMS

*The Steel Company of Canada, Limited, Hamilton.

STEEL BUILDINGS

*The Canadian Bridge Co., Ltd., Walkerville, Ont.

*Dominion Bridge Co., Ltd., Montreal.

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

STEEL CASTINGS

*Canadian Steel Foundries, Ltd., Montreal, Que.

*Dominion Steel Foundry Co., Ltd., Hamilton.

*Joliette Steel Co., Ltd., Montreal.

STEEL FILING EQUIPMENT

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

STEEL PEN STOCKS

*Jenckes Machine Co., Sherbrooke.

STEEL RODS

*The Steel Co. of Canada, Ltd., Hamilton.

STEEL SASH

*Dennis Wire & Iron Works Co., London.

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

STEEL SHELVING

*Dennis Wire & Iron Works Co., London.

STEEL WIRE RODS

*The Steel Company of Canada, Limited, Hamilton.

TELEPHONE ACCESSORIES

*Northern Electric Co., Limited, Montreal.

STENCILS, brass

Pritchard-Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

STEREOTYPING

Central Press Agency, Toronto

STOKERS

*The Jones Underfeed Stoker Co., Ltd., Toronto.

STOOLS AND BENCHES, piano and organ

*Otterville Mfg. Co., Ltd., Otterville, Ont.

STOOLS, steel factory

*Steel Trough and Machine Co., Ltd., Tweed, Ont.

STONE

The Corinthian Stone Co., Guelph, Ont.

The Hagersville Contracting Co., Hagersville, Ont.

STORE FITTINGS

The Canadian Office & School Furniture Co., Ltd., Preston, Ont.

STOVES

Smith Foundry Co., Ltd., Fredericton, N.B.

Tudhope-Anderson Co., Limited, Orillia, Ont.

Bedford Stove Co., Bedford, Que.

STOVE LININGS

Standard Clay Products, Ltd., St. Johns, Que.

STOVES AND RANGES

Bedford Stove Co., Bedford, Que.

Lee Mfg. Co., Ltd., Pembroke, Ont.

The Jas. Smart Mfg. Co., Ltd., Brockville, Ont.

McClary Mfg. Co., London, Ont.

*Otterville Mfg. Co., Ltd., Otterville, Ont.

STRUCTURAL STEEL

*Dominion Bridge Co., Montreal.

*Hamilton Bridge Works Co., Ltd., Hamilton.

*McKinnon Holmes & Co., Sherbrooke, P.Q.

*The Canadian Bridge Co., Ltd., Walkerville, Ont.

*The Structural Steel Co., Ltd., Montreal.

SUIT CASES

J. Eveleigh & Co., Ltd., Montreal.

The M. Langmuir Mfg. Co. of Toronto, Ltd., Toronto.

SURFACERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

SWITCHES, railway

Canadian Ramapo Iron Works, Ltd., Niagara Falls, Ont.

SWITCHES AND FROGS

*Canadian Steel Foundries, Ltd., Montreal, Que.

SWITCH STANDS

Canadian Ramapo Iron Works, Ltd., Niagara Falls, Ont.

TABLE COVERS, chenille

Hamilton Cotton Co., Hamilton, Ont.

TANKS

*Chicago Bridge & Iron Works, Bridgeburg, Ont.

Goold-Shapley-Muir Co., Ltd., Brantford, Ont.

*McKinnon Holmes & Co., Sherbrooke, P.Q.

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

*The Goldie & McCulloch Co., Ltd., Galt.

*The Watrous Engine Works Co., Ltd., Brantford.

TANKS, steel storage

*Steel Trough and Machine Co., Ltd., Tweed, Ont.

TANNERS' SUPPLIES

McClary Mfg. Co., London, Ont.

TAPS

*Butterfield & Co., Rock Island, P.Q.

*Pratt & Whitney Co., Dundas.

TAPES, measuring

The Lufkin Rule Co., of Canada, Ltd., Windsor, Ont.

TAPES, paper and cloth, gummed and ungummed

Gummed Papers, Ltd., Brampton.

TELEPHONE ACCESSORIES

*Canadian Independent Telephone Co., Toronto.

*Northern Electric Co., Limited, Montreal, Que.

TENTS

Mackenzie & Co., Ottawa, Canada.

Turner, J. J., & Sons, Peterboro, Ont.

*Scythes & Co., Ltd., Toronto.

TERRA ALBA

*Albert Mfg. Co., Hillsborough, N.B.

TERRA COTTA (architectural)

Toronto Plate Glass Importing Co., Ltd., Toronto.

TEXTILE SUPPLIES (shuttles, bobbins, spools and picker sticks.)

The Lachute Shuttle Co., Limited, Lachute Mills, P.Q.

THUMB SCREWS

*Canadian Billings & Spencer, Ltd., Welland.

TILING, interlocking rubber

Dunlop Tire & Rubber Goods Co., Ltd., Toronto.

*Gutta Percha & Rubber, Ltd.

TIME RECORDERS

*International Time Recording Co. of Canada, Ltd., Toronto.

TIRES, cycle, auto and truck

Dunlop Tire & Rubber Goods Co., Ltd., Toronto.

*Gutta Percha & Rubber, Ltd.

TRADE MARKS AND DESIGNS

Ridout & Maybee, Toronto.

TRAPS

*C. A. Dunham Co., Ltd., Toronto.

*Canadian Morehead Mfg. Co., Woodstock.

TRANSFORMERS

*The Canadian Crocker-Wheeler Co., Limited, St. Catharines.

TOOLS, track

B. J. Coghlin Co., Ltd., Hamilton, Ont.

TOOLS, sheet metal workers'

Brown, Boggs Co., Ltd., Hamilton, Ont.

TRANSLATIONS INTO FRENCH

Raoul Renault, Quebec City.

TRANSMISSION MACHINERY

*Canadian Link Belt Co., Toronto.

*Dodge Mfg. Co., Ltd., Toronto.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

*The Watrous Engine Works Co., Ltd., Brantford.

TROLLEYS

*Richard-Wilcox Canadian Co., Limited, London, Ont.

*Northern Crane Works, Limited, Walkerville.

TRUCKS

The Gurney Scale Co., Hamilton, Ont.

*Northern Crane Works, Limited, Walkerville.

TRUCKS, brick, tile and lumber

*Watrous Engine Works Co., Ltd., Brantford.

TRUCKS, motor

*National Steel Car Co., Limited, Hamilton.

TRUCKS, warehouse and factory

The W. S. Mahaffy Co., Toronto.

TRUCKS FOR OFFICE AND VAULT USE

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

TRUNKS

Lamontagne Ltd., Montreal, Que.

J. Eveleigh & Co., Ltd., Montreal, Que.

The M. Langmuir Mfg. Co. of Toronto, Ltd., Toronto.

TUBING, brass and copper

*Booth-Coulter Copper & Brass Co., Ltd., Toronto.

Canadian Seamless Wire Co., Toronto.

*Tallman Brass and Metal Co., Hamilton, Ont.

TUBING, gold and silver

Canadian Seamless Wire Co., Toronto.

TUMBLERS, foundry

*Northern Crane Works, Limited, Walkerville.

*Smart-Turner Machine Co., Ltd., Hamilton, Ont.

TURBINES, steam

*The Canadian Crocker-Wheeler Co., Limited, St. Catharines.

TWEEDS

Rosamond Woollen Co., Almonte, Ont.

TWINES

*Doon Twines Ltd., Doon, Ont.

*Shurly & Derrett, Ltd., Toronto.

TWINES, binder

Brantford Cordage Co., Ltd., Brantford, Ont.

TWINES, cotton

Hamilton Cotton Co., Hamilton, Ont.

TWIST DRILLS

*John Morrow Screw and Nut Co., Ltd., Ingersoll.

*Pratt and Whitney Co., of Canada, Dundas, Ont.

*The Wilt Twist Drill Co., Ltd., Walkerville, Ont.

UNDERWEAR

Galt Knitting Co., Ltd., Galt, Ont.

UNDERWEAR, imperial

Kingston Hosiery Co., Ltd., Kingston, Ont.

UNIONS

*Dart Union Co., Ltd., Toronto, Ont.

*Otterville Mfg. Co., Ltd., Otterville, Ont.

UPHOLSTERED FURNITURE, leather and tapestries

Imperial Rattan Co., Ltd.

VALVES

*Kerr Engine Co., Ltd., Walkerville.

VALVES, for steam and water

Jenkins Bros., Ltd., Montreal, Que.

VALVES, regrinding globe, angle, cross checks, swing checks, etc.

Penberthy Injector Co., Ltd., Windsor, Ont.

VARNISHES

*Ault & Wiborg Co. of Canada, Ltd., Toronto.

Berry Bros., Walkerville, Ont.

R. C. Jamieson & Co., Ltd., Montreal, Que.

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*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

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*The Goldie & McCulloch Co., Ltd., Galt.

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*Sheldons, Ltd., Galt.

VENTILATING SYSTEMS

Gurney Foundry Co., Ltd., Toronto.

VENTILATORS

*A. B. Ormsby, Ltd., Toronto.

*The Metallic Roofing Co. of Canada, Ltd., Toronto, Ont.

VINEGAR

The St. Hyacinthe Distillery Co., Ltd., St. Hyacinthe, Que.

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Tudhope-Anderson Co., Ltd., Orillia, Ont.

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Standard Clay Products, Ltd., St. Johns, Que.

WASHERS

*The Steel Company of Canada, Limited, Hamilton.

WASHERS, plate or wrought

London Rolling Mill Co., Ltd., London, Ont.

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*Scythes & Co., Ltd., Toronto.

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Benjamin Moore & Co., Ltd., Toronto.

*Paterson Manufacturing Company, Toronto and Montreal.

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

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Hamilton Cotton Co., Hamilton, Ont.

WEBBING, non-elastic
Hamilton Cotton Co., Hamilton, Ont.

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*Ontario Wind Engine & Pump Co., Ltd., Toronto.

WHEELS
*Canadian Car & Foundry Co., Ltd., Montreal, Que.

Wheels, corundum
*Canadian Hart Wheels, Ltd., Hamilton, Ont.

WHEELS, emery
*Canadian Hart Wheels, Ltd., Hamilton, Ont.

WHEELS, propeller, iron and steel
*Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.

WHEELS, turbine, water
*Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.

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*Ontario Wind Engine & Pump Co., Ltd., Toronto.

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C. H. Johnston & Sons, Ltd., Montreal, Que.

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C. H. Johnston & Sons, Ltd., Montreal, Que.

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*Eugene F. Phillips, Electrical Works, Ltd., Montreal.

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*The B. Greening Wire Co., Ltd., Hamilton.

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C. H. Johnston & Sons, Ltd., Montreal, Que.
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WOOD PRINTERS
Barchard & Co., Ltd., Toronto.

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WOOD SPLIT PULLEYS
*Dodge Mfg. Co., Ltd., Toronto.
*The Goldie & McCulloch Co., Ltd., Galt, Ont.

WOOL
*H. V. Andrews, Toronto.

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Rosamond Woollen Co., Almonte, Ont.

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*The Steel Company of Canada, Ltd., Hamilton.

WROUGHT PIPE
*The Steel Company of Canada, Ltd., Hamilton.

YARNS, cotton
Hamilton Cotton Co., Hamilton, Ont.

ZINC, electrical
*The Canada Metal Co., Toronto.

*For Display Advertisement see Index, Page 1099

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A GOOD COVERING pays for itself in one Season, and is a revenue producer indefinitely. **WE HAVE IT** The Best is the Cheapest

EUREKA MINERAL WOOL & ASBESTOS COMPANY

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We are well equipped at present to handle one or two new accounts.

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Cables—Gibjay, Toronto

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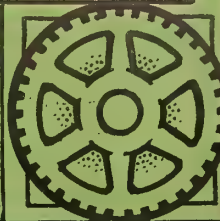
WINNIPEG
Codes—ABC, 5th Edition



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• TORONTO • MONTREAL, HAMILTON, WINNIPEG, VANCOUVER, HALIFAX, QUEBEC.



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TORONTO

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DROP FORGINGS



SHEET METAL WORK
GENERAL STAMPINGS

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THE LARGEST COMMERCIAL DROP FORGE PLANT IN CANADA

We are equipped to handle large forging contracts.
This expansion also increases our stamping facilities.
We stand by our Motto: Quality and Service.

DOMINION FORGE & STAMPING CO., LIMITED
Walkerville - Ontario

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Superior quality, differs from all others, gives greatest mileage. Sold in Tank Cars, Drums and Barrels, also by Tank Wagon.

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Not equal to Peerless in volatility or staying powers, but so good that many customers never ask for better. Sold in Tank Cars, Drums and Barrels, also by Tank Wagon.

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A Lubricant perfect in all its requirements for use in all Ford Cars. Sold in Barrels, ½ Barrels, Cans and Tins. Special Lithographed Tins made to go under seat of Cars.

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Very highest quality non-carbonizing, cold-proof Motor Oil, made in light, medium and heavy grades for all cars. Sold in Barrels, ½ Barrels, Cans and Lithographed Tins.

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Sold in Tank Cars and Barrels.

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"Venango Special," "Electrolene," "Lampolene," and "Petrolene." All these burning oils are of great merit. Sold in Tank Cars and Barrels (Car Loads or Less), also by Tank Wagon.

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Cylinder, Engine, Machine, Dynamo, etc., for all makes of Motors, Steam and Electric plants. Sold in Tank Cars, Barrels, ½ Barrels, Cans and Lithographed Tins.

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Eminently satisfactory. In three grades. Sold in Tank Cars and Barrels.

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There is a New Five Dollar Bill

for the man who can prove that
he has not had a saving by using
Dart Union Pipe Couplings

DART UNION CO., Ltd.
TORONTO

ALL JOBBERS SELL THEM

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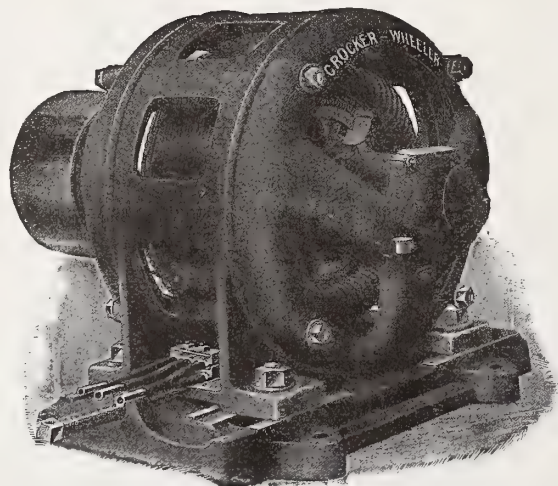
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THE DESIGN OF CROCKER-WHEELER INDUCTION MOTORS

INCLUDES :

Heavy Shafts

Large Journals

High Power Factor

Excellent Efficiency

They have many other desirable features;
Bulletin 155 describes them.

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MANUFACTURERS AND ELECTRICAL ENGINEERS

Head Office and Works : St. Catharines

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Reliable, Economical, Automatic and "All-Canadian"—the **PRESTO-PHONE**

This is the system that gives the final demonstration of the ability of Canadian Inventors to produce a factory telephone system equal to any other in the world.

The Presto-Phone was invented, and is made, right here in Canada. Its purpose is to furnish a telephone system requiring no central operator by means of which every dept. head of a factory can be instantly communicated with by the general manager and all linked together for *instant* intercommunication.

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Practical
and
Profitable
Try It!

A PRESTO-PHONE DESK SET



YORK KNITTING MILLS Ltd., Toronto
Old heating equipment changed to Dunham System.
New building also equipped with Dunham Traps.

The DUNHAM VACUUM HEATING SYSTEM

THE TIME to think about changing your Heating System to an efficient plant is NOW.

The annoyances and troubles of your present heating equipment are fresh in your mind.

The high cost of coal is not likely to be overlooked.

Because the season is nearing its close is just the reason why you should settle the heating question now. Delay may mean another season of discomfort and waste.

To ensure heating efficiency, comfort and economy in future the installation of DUNHAM RADIATOR STEAM TRAPS on each radiator will effect immediate results. Let us advise with you on your heating problems.

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ADJUSTABLE TAPS

FOR **Shrapnel and
H.E. Shells**



ON hard, tough shell steel, solid taps are too expensive as the excessive wear quickly puts them below gauge size.

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The accuracy to size and form is easily maintained and the life of the tool prolonged far beyond that of a solid tap at a comparatively small advance in price.

We can supply them for all tapping operations on Shrapnel and H.E. shells to 4.5" diameter.

Ask for our list and prices of Shell Tools
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If you have not received our No. 8 catalogue yet, we have one for you.

PRATT & WHITNEY CO.
of Canada, Limited
Dundas : Ontario

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723 Drummond Bldg.

WINNIPEG
1205 McArthur Bldg.

VANCOUVER
609 Bank of Ottawa Bldg.



LATHES and Attachments

for the manufacture of — — —

This Equipment is
all New, Modern
and Heavy

Write or wire our
nearest office for
particulars

EARLY DELIVERY

6", 8"

and

9.2

HIGH
EXPLOSIVE
SHELLS

**THE JOHN BERTRAM & SONS CO.
LIMITED**

DUNDAS, ONTARIO, CANADA

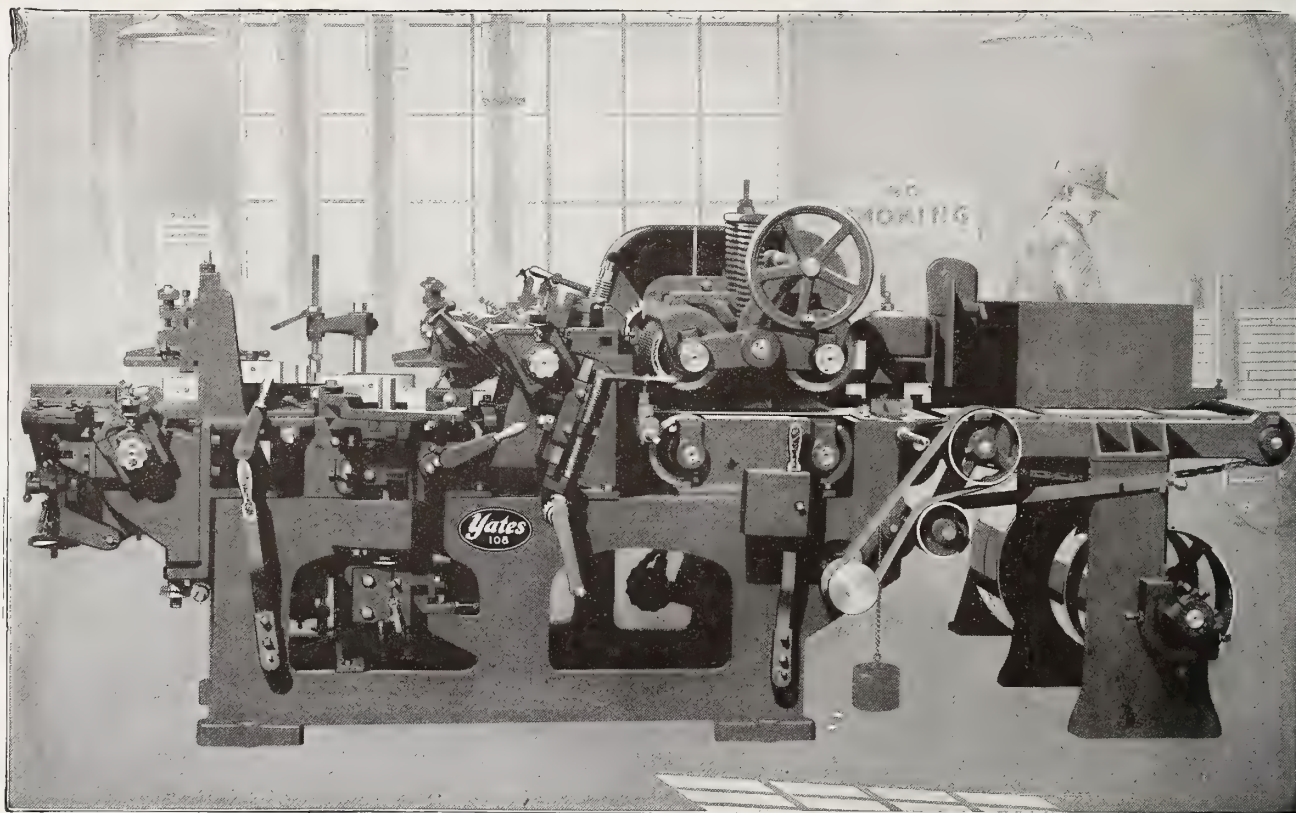
MONTREAL
723 Drummond Bldg.

VANCOUVER
609 Bank of Ottawa Bldg.

WINNIPEG
1205 McArthur Bldg.



Increase the Ratio of Productive Time



WITH the prices of labor mounting higher week by week, there's nothing more necessary than utilization of every possible moment in productive effort. In hundreds of wood-working plants there are old style moulders which, under present conditions, are simply lavish in their waste of time. Maybe you've never thought of it because loss of productive time is one of the hardest sources of loss to detect. You've got that waste in your factory if you're using old slow feed moulders with hand-made knives, instead of

The Number 108 Moulder



"The Invariable Choice of the Man Who Knows."

Send for our folder, "Putting the Prod to Production." It tells all about the New Yates Number 108. No obligation involved.

Get rid of the old moulders. Don't let them sap, unhindered, the vitals of your business. Investigate the Yates Number 108 Moulder, with its slip-on heads and wide open construction which permits it to be set up in a few moments. Look into the use of milled bits on the Number 108, giving a perfect match of pattern at once, without loss of time in filing and tinkering "to make 'em alike."

Consider the high rates of feed—75 to 100 feet per minute—that can be used, in most cases, without lowering the quality of the output in the slightest degree. When you come to understand the difference between old style moulders and the new Yates high-speed Number 108, you'll see where the 108 is a money-saving investment.

P. B. Yates Machine Co. Ltd.

HAMILTON, ONT. CANADA

U. S. PLANT . . . BELOIT, WIS.



Going into camp in the woods.

In the Heart of the Woods

grow the Spruce and Pine Trees from which we manufacture our

LUMBER

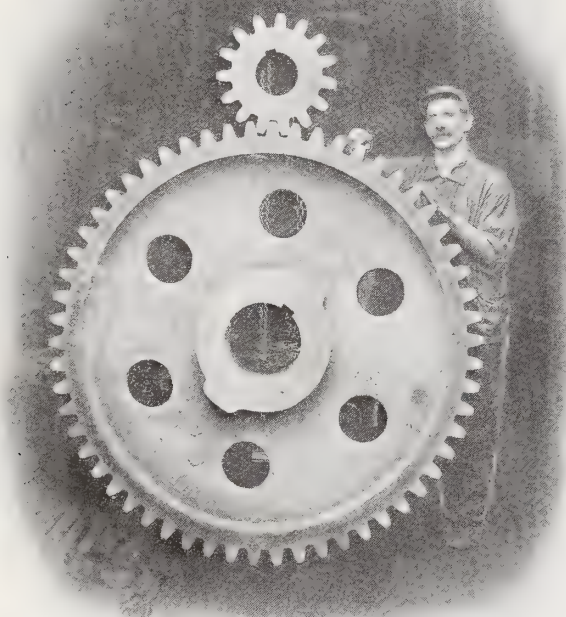
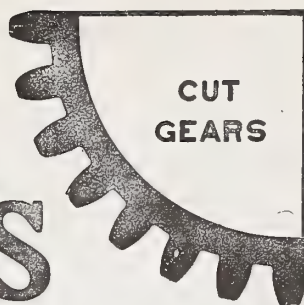
We get after the logs and run them through our modern mills equipped with the last word in wood-working machinery.

You can get after the finished article by applying for our monthly Stock and Price List.

*Spruce and Pine Lumber
for All Purposes*

Bathurst Lumber Co., Limited
BATHURST, N.B., CANADA

CUT GEARS



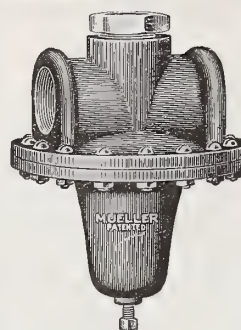
THESE HEAVY HIGH SPEED
SPUR GEARS FOR SPECIALLY
SEVERE REQUIREMENTS,
WERE A RECENT RUSH ORDER

Note Our Shop Capacities

Spur Gears up to.....	91 ins. diam.
Bevel Gears " ".....	62 ins. "
Worm Gears " ".....	108 ins. "
Helical, Spiral or	
Herringbone up to...	36 ins. "
Racks up to	10 ft. length

Write us for quotations.

**Hamilton Gear &
Machine Co.**
VAN HORNE ST., **TORONTO**



**Most
Efficient
and
Economical**
and certainly the
cheapest in the
long run.

MUELLER VALVES

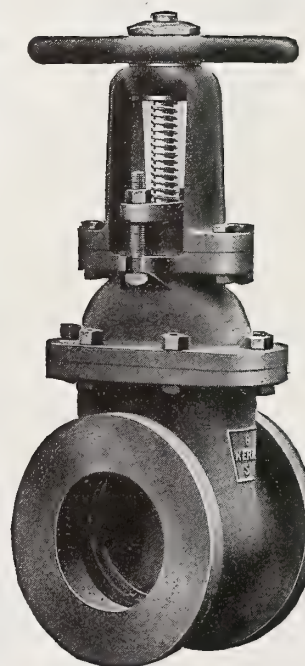
If your plant requires the use of Reducing and Regulating Valves, it will pay you to consider the Mueller make. Their design and construction are one hundred per cent. efficient. Thousands of them are in use throughout Canada and elsewhere. In every case they are giving completely satisfactory service.

Write for Catalogue 5

A copy will be sent by return mail. Keep it handy for a rush order.

H. Mueller Mfg. Co., Ltd.
SARNIA - ONTARIO

Kerr Iron Body Gate Valves



embody all
that is modern
in gate valve
construction.
Strong, com-
pact and
pleasing in
appearance.

Every valve
tested and
guaranteed.

THE KERR ENGINE CO., Limited
Valve Manufacturers :: Walkerville, Ontario

Jenkins Bros. "Type K" Brass Gate Valves

Only the WEAR and TEAR of HARD, CONTINUOUS SERVICE is the TRUE TEST of a VALVE.

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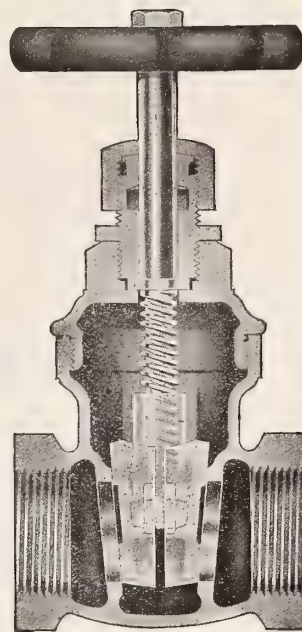


Fig. 300
Type "K"
Brass Gate Valves, Screwed
(Sectional View)

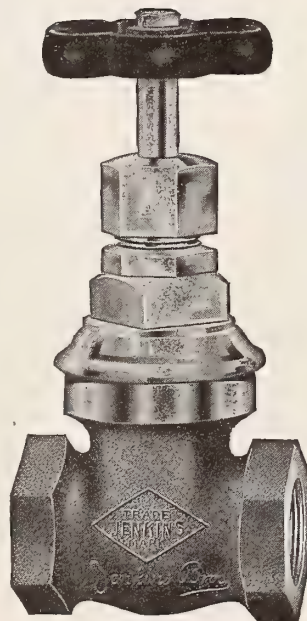


Fig. 300
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Brass Gate Valve, Screwed
(Outside View)



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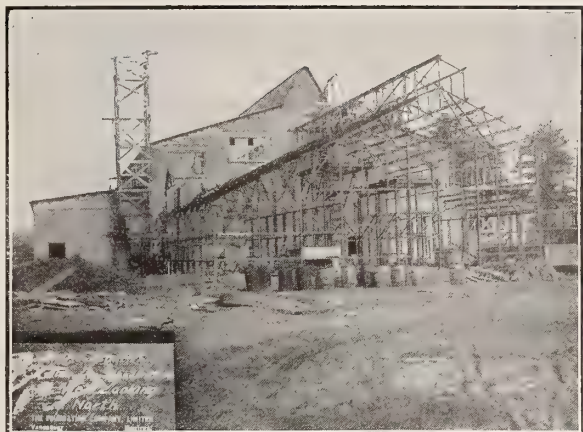
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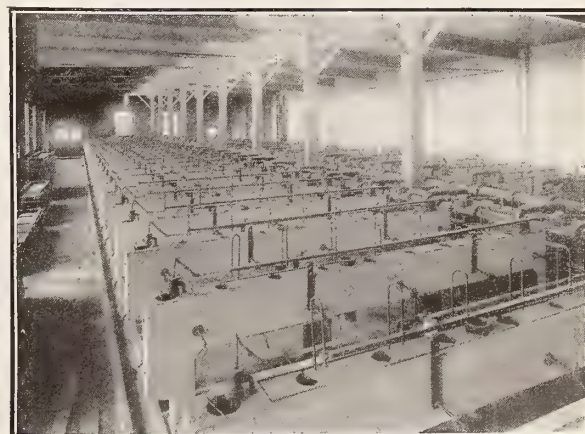
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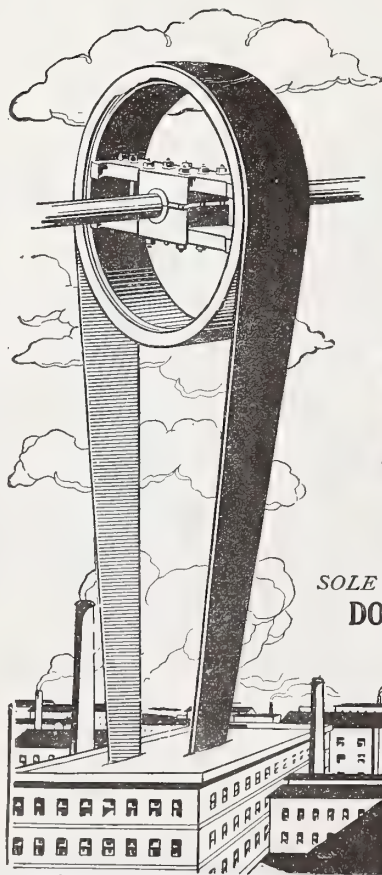
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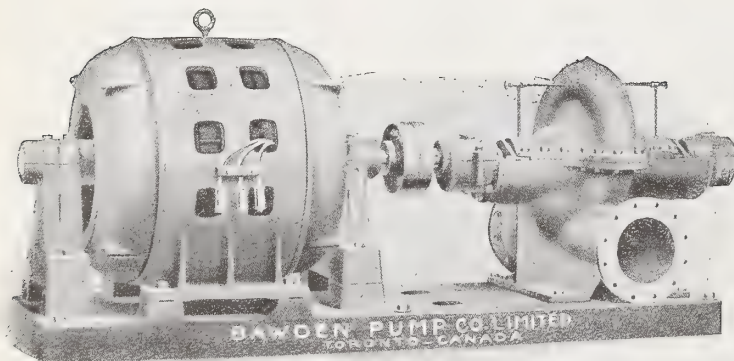
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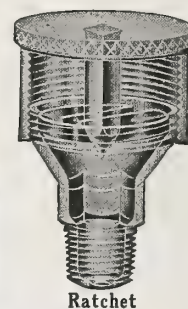
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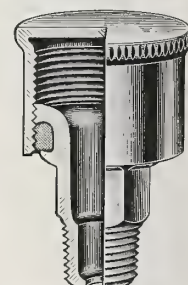


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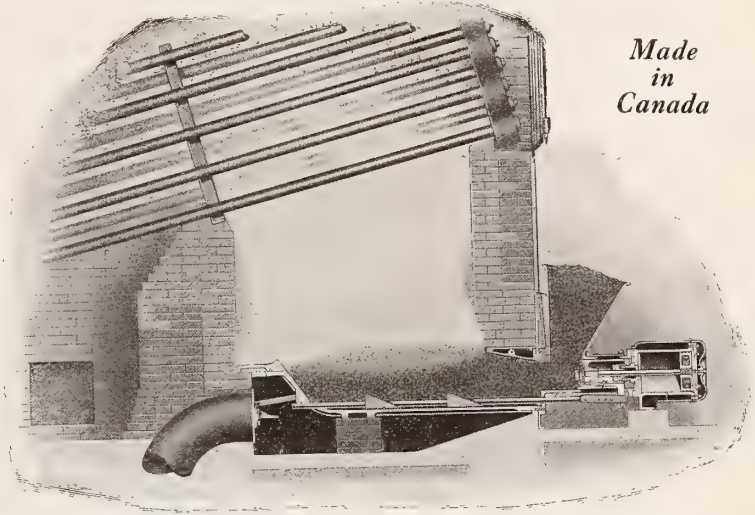
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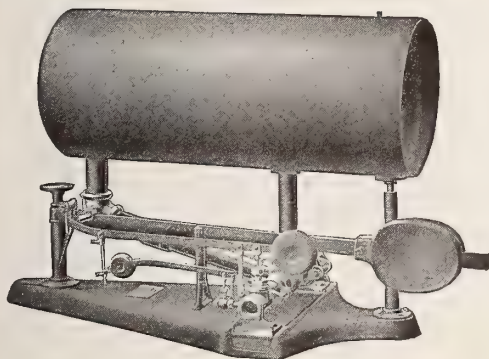
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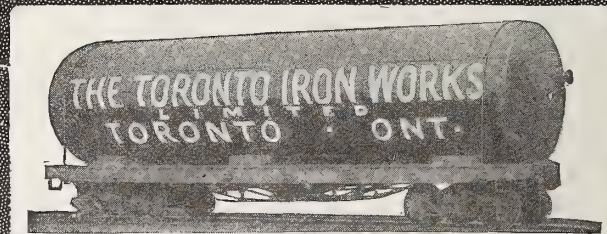
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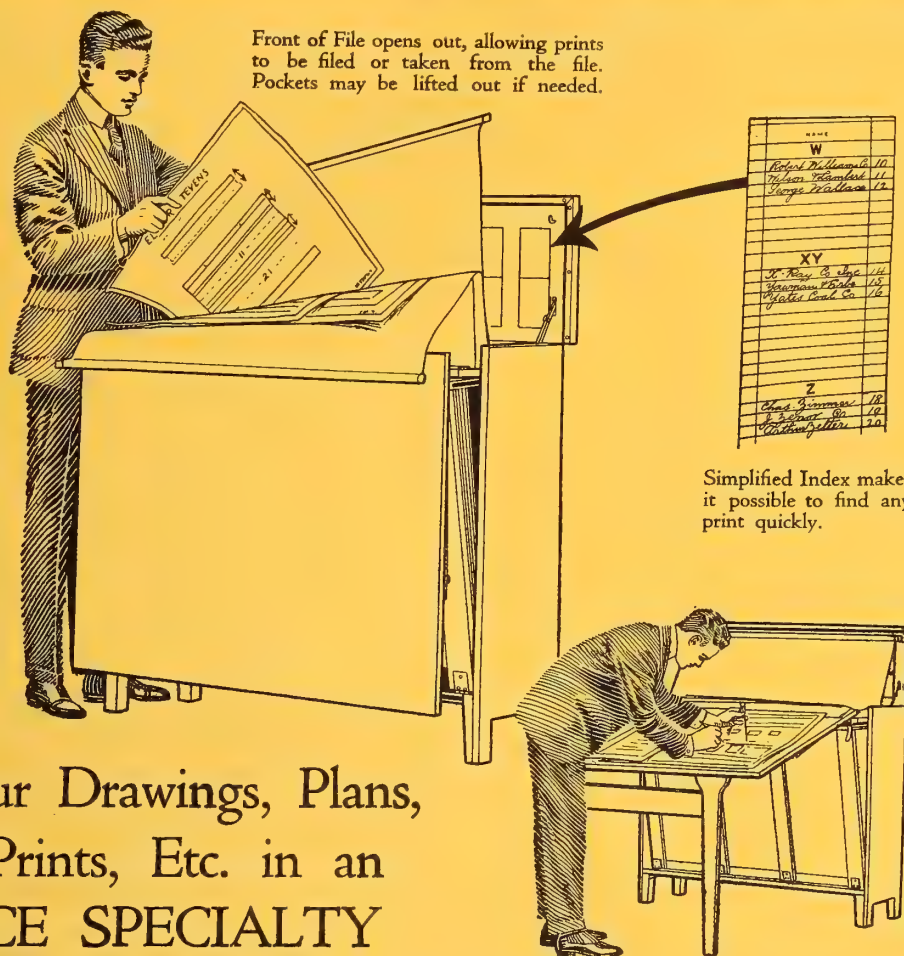
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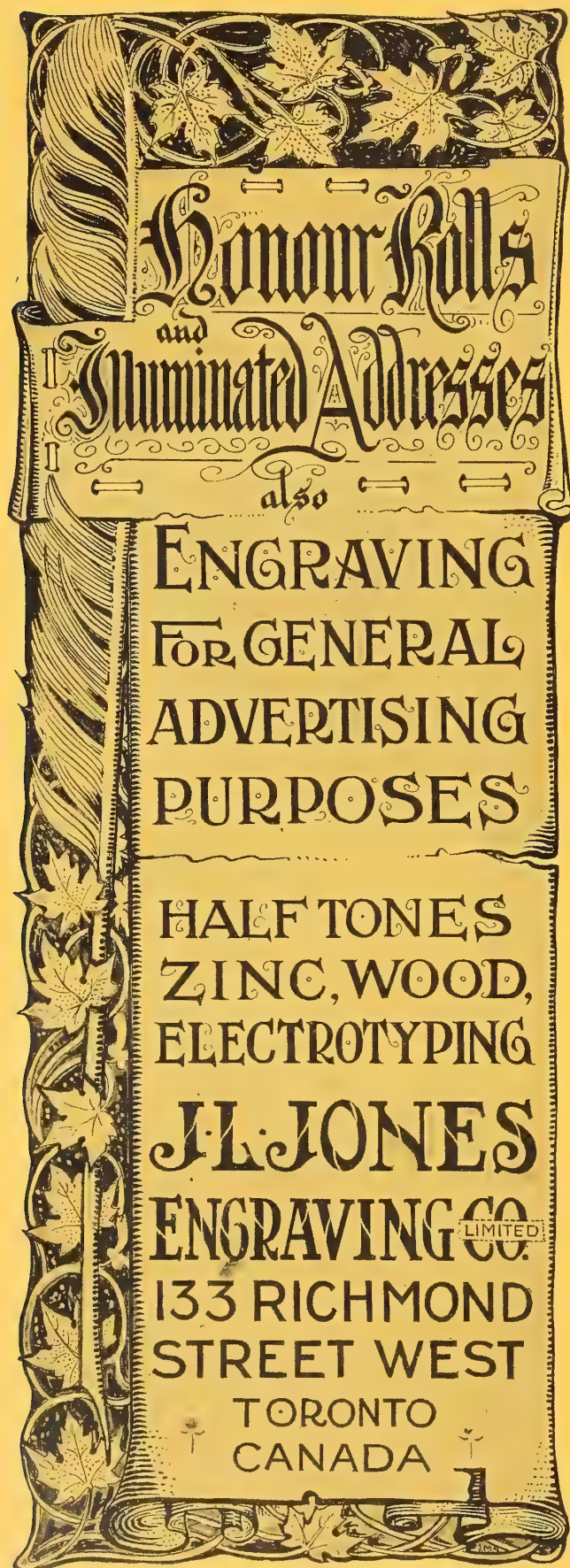
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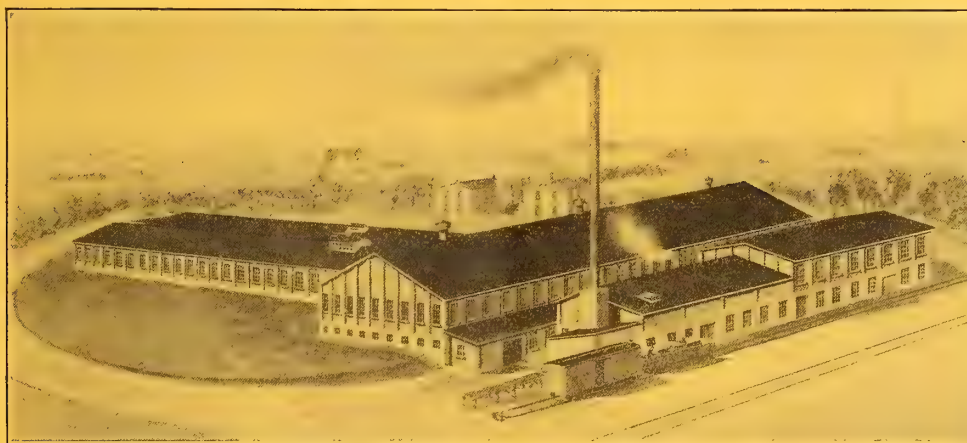
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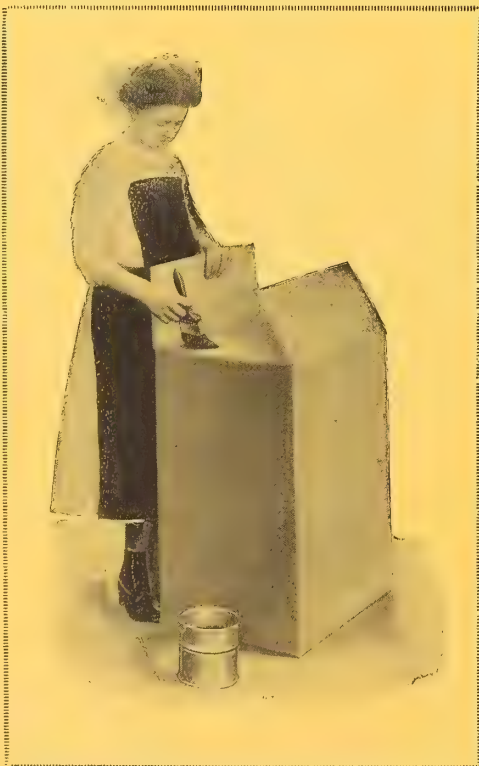
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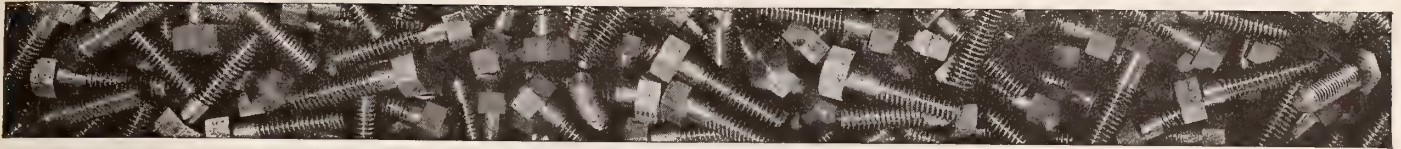
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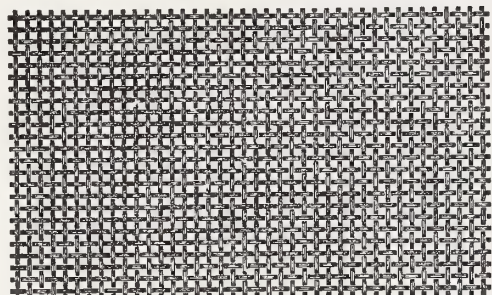
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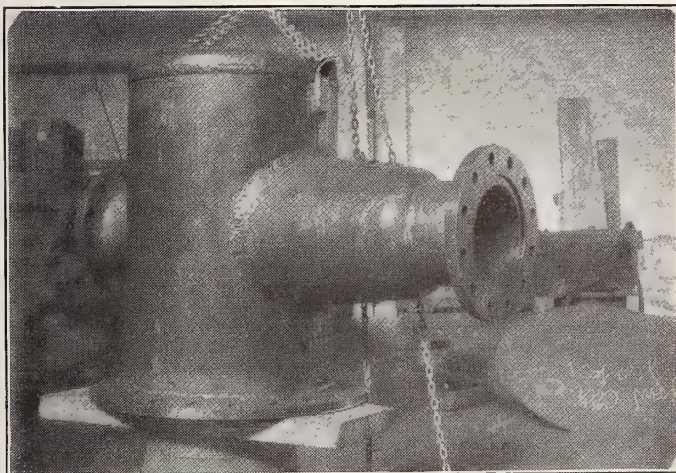
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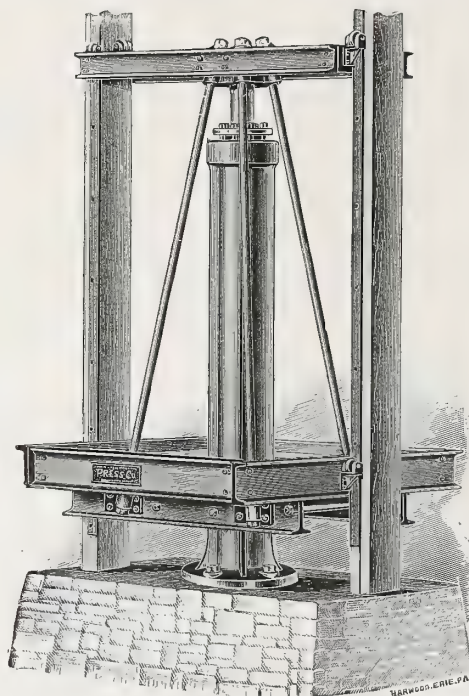
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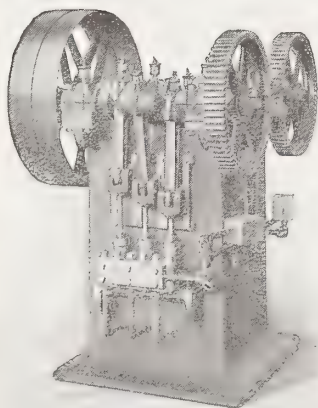
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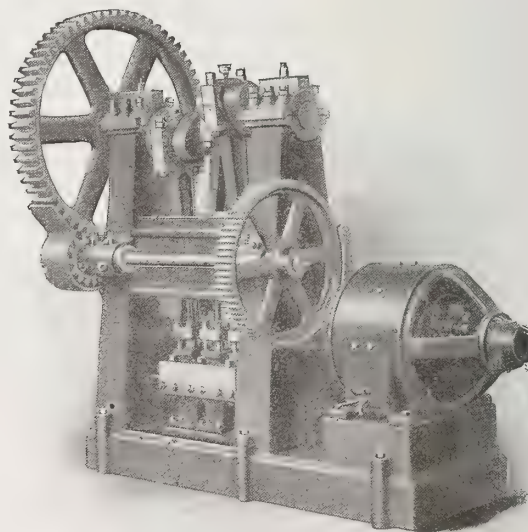
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This is the reason our customers are sending us repeat orders on high-grade

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**PLATING AND
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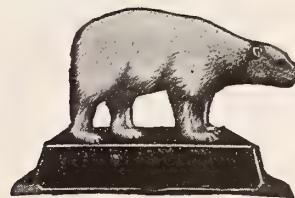
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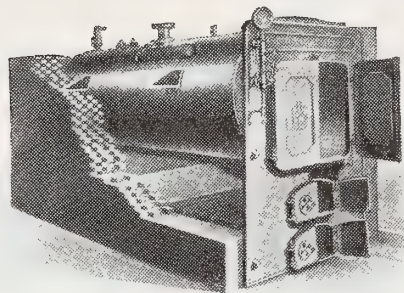
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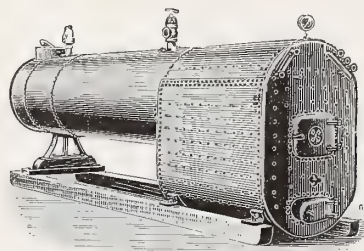
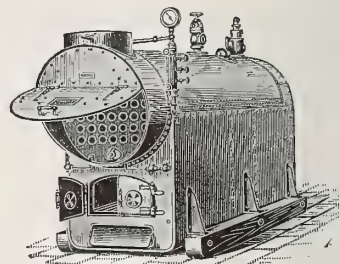
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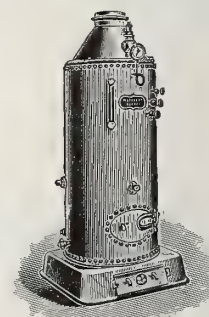


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"Referring to conversation with you this morning, we are pleased to state that we have used your PROTECTO BOILER PRESERVATIVE for many months, and find it is all you claim it to be, and we intend to continue using it."

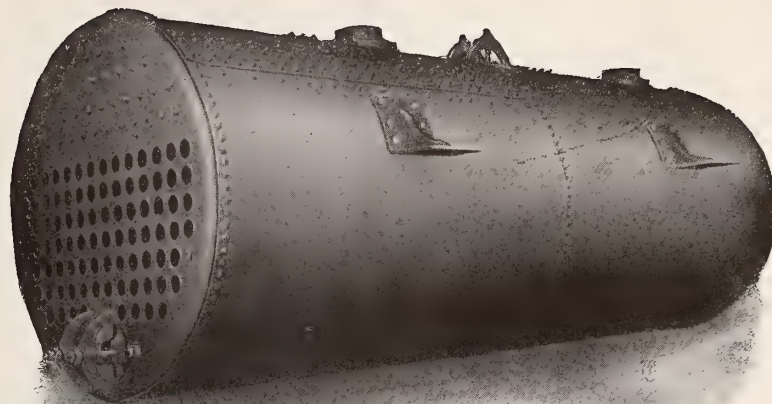
And another about PROTECTOCOAT "that he saved 1½% of fuel during summer months in addition to all brickwork setting repairs being cut out for four years." (Names on application.)

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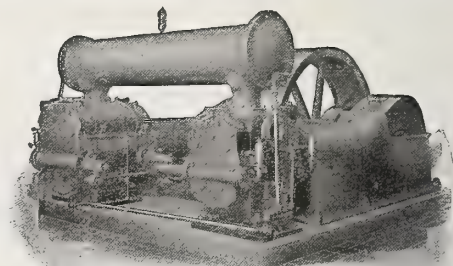
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Continuous and Economical Service

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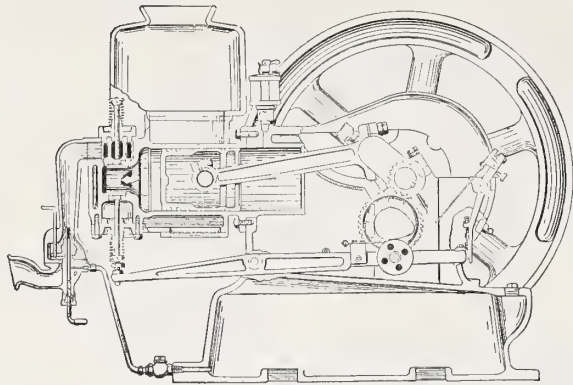
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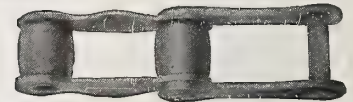
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A few of the 40 types of Link-Belt



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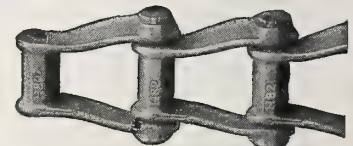
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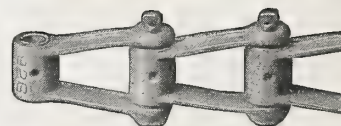
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We have experimented on the SPECIAL SHELL STEEL

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HACK SAW BLADE
that will give unequalled
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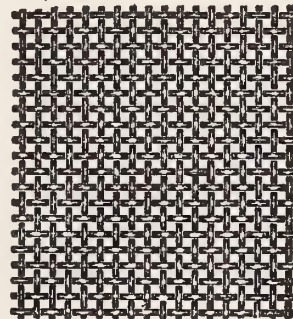
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It has the inherent quality that is
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And for drilling and free turning
you will find few others equal to

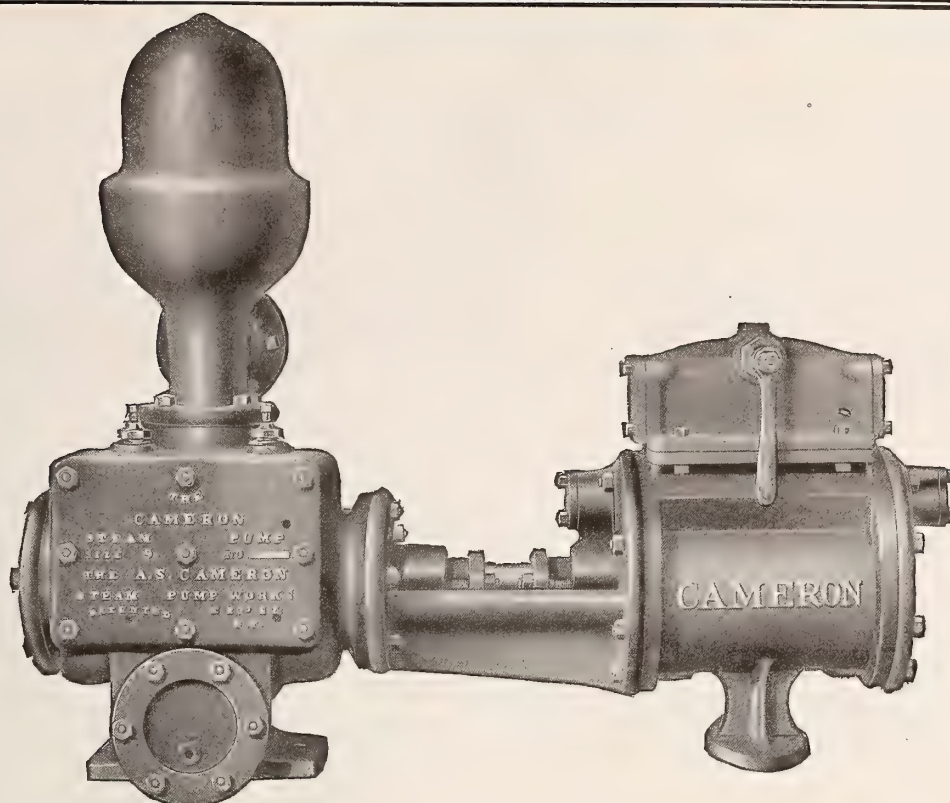
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*Your inquiry for quotations on these metals
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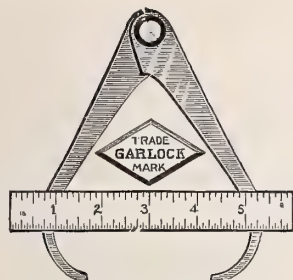
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 It is equally well adapted to air, acids, ammonia,
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 It is made of the highest quality of long fibre asbestos,
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 This sheet is furnished in all thicknesses from 1-64 to $\frac{1}{4}$ inch.
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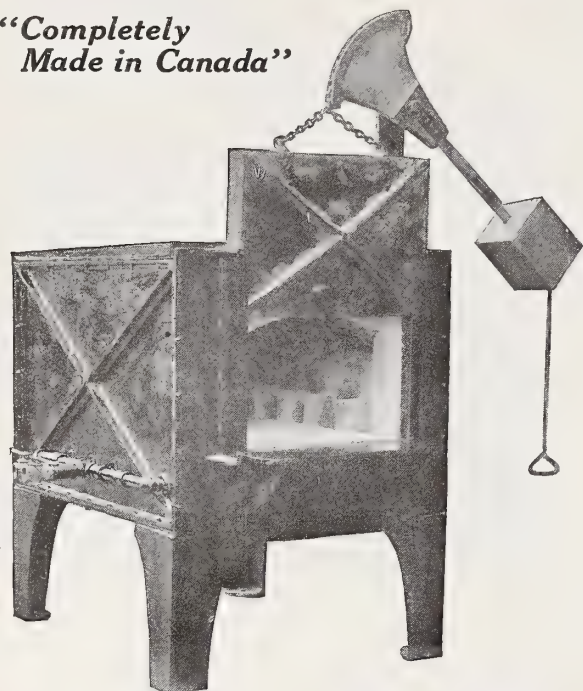
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*"Completely
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Hoskins Furnaces Gas, Oil and Electric

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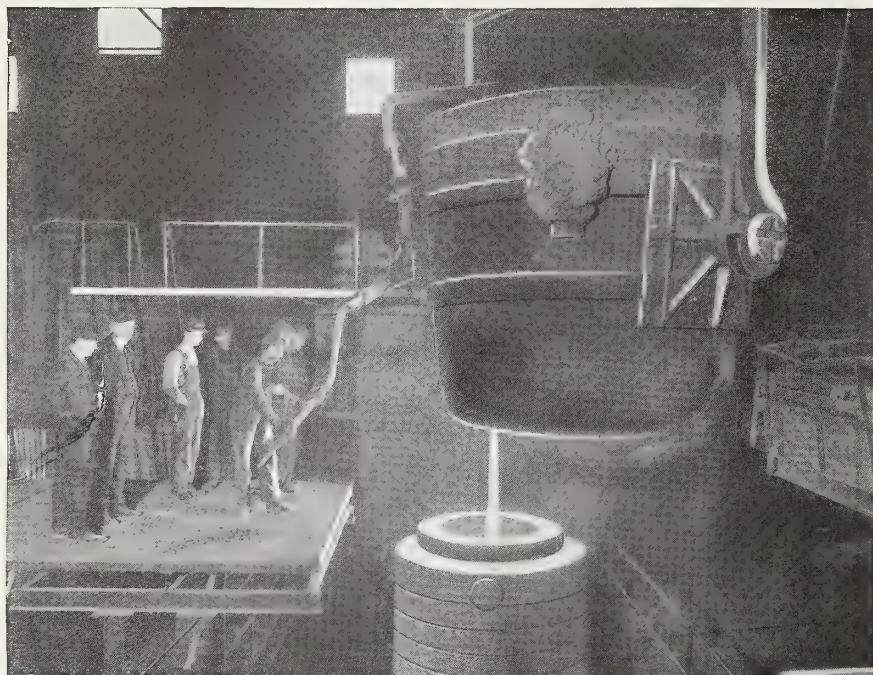
THE
STEEL COMPANY
OF
CANADA
LIMITED

HAMILTON

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MONTREAL

OUR FIELD IS THE WHOLE WORLD



A 30-Ton Ingot
being poured
at the
Blast Furnace
at
Sydney Mines
N.S.

“OLD SYDNEY COAL”

Shipped from North Sydney, N.S.

At Wabana, Nfld., the Company's Iron Mines are located, these being the richest in ore on the North American continent.

The Company's Collieries and Blast Furnaces are at Sydney Mines, N.S.

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LIMITED

Head Offices:
NEW GLASGOW, N.S.

Are You Sure Your Electrical Wiring is Safe?

There is but one absolutely safe
method of wiring. Instal a
CONDUIT SYSTEM, it will
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"Galvaduct" & "Loricated"
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HAVE NO EQUALS

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Over 600 miles of Lead-covered Telephone Cable was the output of our plant for one year.

The single telephone wire in this cable amounted to nearly a billion feet or enough to encircle the earth at the Equator more than seven times.

The supremacy of the Northern Electric Company as the largest makers of bare and insulated wires and cables for all purposes has never been questioned.

Northern Electric Company
LIMITED

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Unequalled manufacturing and shipping facilities insure prompt deliveries.

The Shipping Department is one of the largest and best equipped in Canada. It can accommodate twenty-two freight cars.

CANADIAN TUBE & IRON CO., LIMITED

MONTREAL, CANADA

WROUGHT PIPE BLACK AND GALVANIZED
1/8 TO 4 INCH

Thoroughly inspected and tested
to 600 lbs. pressure and branded.

Ask Your Jobber for



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BAR IRON AND STEEL

Colonial Wire Mfg. Co., Limited
WIRES, WIRE NAILS, WOOD SCREWS, ETC.

WORKS: LACHINE CANAL

MONTREAL, CANADA

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SAVE 80% YEARLY OF FUSE COSTS

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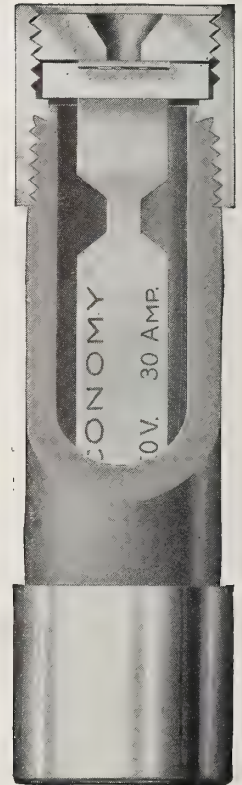
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If you buy fuses it will pay you to investigate the claims made for the Economy Fuse. Drop us a line asking for Catalogue 40, at same time stating capacity and voltage required, and free samples will be sent you. We can show you how to save 80% yearly in fuse costs—a saving you'll admit is worth while. Write us for Catalogue 40 to-day. "Made in Canada."

Economy Fuse & Mfg. Co. of Canada, Limited

UNITY BUILDING, MONTREAL

Manufacturers in Canada of "S & C" High Potential Fuses—to 150,000 Volts

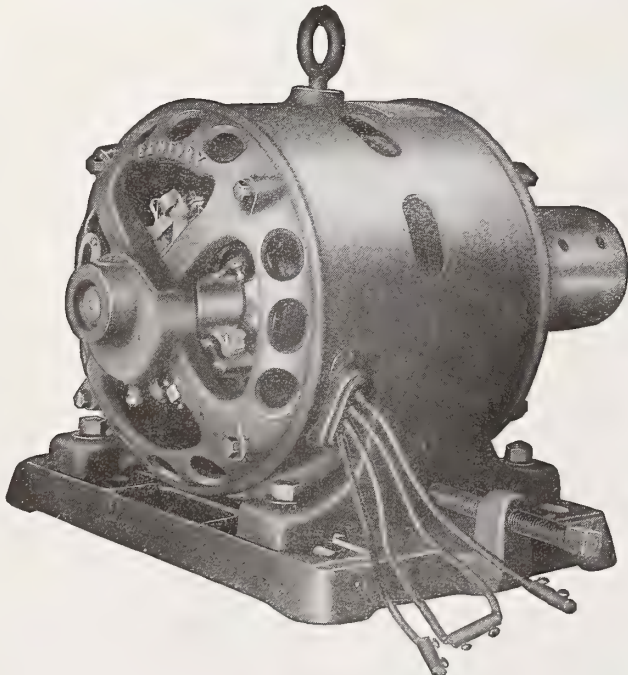


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Jones & Moore Electric Co.

LIMITED

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REPAIRS PROMPTLY PERFORMED

FOR SALE The Following Second-hand MOTORS in Good Order :

3 phase, 60 cycle, 220 volts				
No.	H.P.	Speed.	Make.	Type
1	50	850	Westinghouse	CCL
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2	30	1120	Westinghouse	CCL
1	20	1120	Westinghouse	CCL
2	10	1120	Westinghouse	CCL
1	7½	1800	Westinghouse	CCL
2	5	1800	T. & H. Elec. Co.	New
2	1	1800	Westinghouse	CCL

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No.	H.P.	Speed.	Make.	Type
3	50	850	Westinghouse	CCL
2	40	850	Westinghouse	CCL
4	30	1120	Westinghouse	CCL
1	30	850	Westinghouse	CCL
1	20	850	Westinghouse	CCL
5	20	1120	Westinghouse	CCL
1	15	1120	Westinghouse	CCL
11	10	1120	Westinghouse	CCL
2	10	1800	Can. General Elec.	
1	10	1800	Tor. & Ham. Elec.	
2	7½	1800	Westinghouse	CCL
5	5	1800	Westinghouse	CCL
9	5	1120	Can. General Elec.	
2	5	1800	Tor. & Ham. Elec.	
1	3	1800	Westinghouse	CCL
2	2	1800	Can. Crocker Wheeler	
3	1	1800	Westinghouse	CCL
1	Auto Starter—new—C.G.E., 220 volts, 60 cycle, 3 phase.			

TRANSFORMERS		
60 cycles, 2200 primary, 220 volt, Secondary.		
4	25 k.w.	Westinghouse.
2	75 k.w.	Can. Crocker Wheeler.
2	50 k.w.	Westinghouse.
2	40 k.w.	Packard.
2	5 k.w.	Packard.
2	5 k.w.	Pittsburgh.

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TORONTO & HAMILTON ELECTRIC CO., Limited
HAMILTON - ONTARIO

*The value of Color in
Illustrated
Catalogues*



(An illustration from Quadri Color Plates used in producing our 1917 Calendar)

We have equipped a department exclusively to color work of all kinds.
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Luxacoted Porcelain Book and Red Seal Coated Book

MADE IN CANADA AND SOLD ONLY BY

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Toronto, Canada



"SPECIFIED BY ARCHITECTS OF NOTE"

Westinghouse

Service

Are You Taking Advantage of Westinghouse Service?

We have resident engineers at each of our district offices who stand ready to give prompt and valuable service to our customers, not only in installing new apparatus, but in taking care of their troubles.

A letter, or a wire, to our nearest district office will receive immediate attention.

Canadian Westinghouse Co., Limited, Hamilton, Ont.

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Traders Bank Bldg.

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WINNIPEG
158 Portage Ave. E.

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Grain Exchange Bldg.

EDMONTON
211 McLeod Bldg.

VANCOUVER
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Barrett Specification Roofs

Made in Canada

Cost Nothing to Maintain—

YOU can select at random any large, important commercial or public building that has been built within the past ten years and find, almost invariably, that it has a Barrett Specification Roof.

Such large and first-class buildings attract first-class architects and engineers, and the preference of such men is almost always for Barrett Specification Roofs. Their popularity

is not to be wondered at, for such a roof is the lowest-priced of all permanent roofs.

It requires no care or maintenance expense and is good for upwards of twenty years without repairs.

The Barrett Specification in your building plan furnishes a fair basis for competitive bids. It insures the best materials being used. It specifies the most approved method of construction.

A copy of The Barrett 20-Year Specification, with roofing diagrams, free on request. Address our nearest office.

THE PATERSON MANUFACTURING COMPANY, LIMITED
MONTREAL TORONTO WINNIPEG VANCOUVER

THE CARRITTE-PATERSON MANUFACTURING CO., LIMITED
ST. JOHN, N.B. HALIFAX, N.S. SYDNEY, N.S.

CANADIAN
FAIRBANKS-MORSE
BLDG.

Winnipeg, Manitoba
Architects: Brown and
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Roofing Contractors:
Winnipeg Ceiling and
Roofing Co., Winnipeg



Our 20 - Year Guaranty Bond

We are now prepared to give a twenty-year Surety Bond Guaranty on every Barrett Specification Roof of fifty squares and over in all towns of 25,000 population and more, and in smaller places where our Inspection Service is available.

This Surety Bond will be issued by the United States Fidelity and Guaranty Company and will be furnished by us *without charge*.

Our only requirements are that the roofing contractor shall be approved by us, and that The Barrett Specification, dated May 1, 1916, shall be strictly followed.

INDUSTRIAL CANADA

ISSUED BY

The CANADIAN MANUFACTURERS ASSOCIATION.

INCORPORATED.

Vol. XVII.

TORONTO, MARCH, 1917

No. 11

INDUSTRIAL CANADA

Issued monthly as the official publication of the Canadian Manufacturers Association (incorporated), and devoted to the advancement of the industrial and commercial prosperity of Canada.

SUBSCRIPTION

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Advertising Rates made known on application

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"Made in Germany."

ACCORDING to many writers of the present time, it is only of recent years that Great Britain has regarded Germany as a competitor in the industrial race. But in 1785 James Boswell published his journal of a tour to the Hebrides with Dr. Samuel Johnson, and the subject of German rivalry was not omitted from the table talk of those days.

During Johnson's stay at Aberdeen, Scotland, he dined with Sir Alexander Gordon, Professor of Medicine at King's College, and Boswell says: "He (Sir Alexander) told us that the value of the stockings exported from Aberdeen was in peace, one hundred thousand pounds, and amounted, in war, to one hundred and seventy thousand pounds." Dr. Johnson asked what made the difference. Here we had a proof of the comparative sagacity of the two professors. Sir Alexander answered: "Because there is more occasion for them in war." Professor Thomas Gordon answered, "Because the Germans, who are our great rivals in the manufacture of stockings, are otherwise employed in time of war." Johnson said: "Sir, you have given a very good solution."

We frequently meet with references to the industrial side of German life under the rule of the Hohenzollerns,

and this passage in Boswell gives us a glance at the products which, even then, were "made in Germany."

Projects of Industrial Research.

THE creation of a new Advisory Council to act in conjunction with the Dominion Government in the furtherance of industrial research, and the mobilization of the scientific resources of Canada, is in exact line with the action taken by the Imperial Government, and cannot fail to be a source of satisfaction to all who recognize the immense power for industrial development such a body can have. The eminent scientists who form the personnel of the Council are men well fitted by their knowledge and record to the task imposed upon them.

Fully recognizing the importance of the subject the Canadian Manufacturers Association (Toronto Branch), jointly with the leading provincial scientific and financial organizations, recently submitted a memorandum to the Government's Advisory Council suggesting that as the first step in carrying on this scheme of Industrial Research, the Government should, through the Advisory Council, establish bureaus of industrial and scientific research, one of which, in their opinion, should be established in the city of Toronto as an important centre of Canada's manufacturing and industrial activity, and provided with funds sufficient to make the bureau an institution befitting the dignity of the country and the importance of its work.

The knowledge to be derived from co-operating with the scientific staff and talent of the University of Toronto, and from utilizing such special laboratory accommodation as the latter may from time to time afford, together with the facilities for collating scientific and technical information which are given by the extensive City, University, Parliamentary and other libraries are additional reasons for locating a bureau at Toronto.

To fulfil the objects of the bureau the following departments are necessary:

1. An information bureau to supply information to the manufacturers on problems that arise within their work. The bureau will also supply information to the manufacturers of new processes and technique in their industries, this information to be given by pamphlets or otherwise.

2. A laboratory for the solution of manufacturing problems that have already been solved, or for the solution of those whose solution is known, but is an alien trade secret.

3. A technical library containing the trade journals and technical magazines that are at present not found in Canada, to supplement the libraries which are in the city of Toronto.

To meet their requirements it will be necessary to have a Director of the Bureau who is a highly trained scientist and also a staff of assistants to carry out the work of the Information Bureau and the Library. Provision will have to be made for laboratory, library and office accommodation, but it is proposed to have the cost of special researches defrayed by those for whom they are undertaken.

As this is the semi-centennial of Confederation, what more fitting monument to it could be erected than the establishment of such a Bureau in the city of Toronto? As Confederation marks one great epoch of Canadian history, so will the forming on a sure and firm foundation of a Bureau for the development of our industries on sound and scientific lines, and the provision of the proper atmosphere and equipment for the young research men who will be developed by the movement, mark a second epoch.

Research Bureaus to be Recommended.

THE recommendations submitted to the Government's Advisory Council on scientific and industrial research were received with appreciation and alacrity. In order to furnish direct assistance to the manufacturing industries of Canada at once, the Council has resolved, in response to the requisition submitted to it, to recommend to the Government the establishment at certain of the great industrial centres of the Dominion, such as Toronto, Montreal and Winnipeg, in co-operation with the Provincial Governments or other bodies of industrial research, bureaus where a complete set of technical magazines and trade journals will be found, and where technical staffs and properly equipped laboratories will assist the manufacturers of the district in solving problems which present themselves in their factories or works. Thus we see evidences of an awakened desire on the part of public bodies and private individuals to bring about a better realization of the industrial and commercial resources of our country, so that we may take our rightful stand among the resourceful units of the great Empire of which we are an integral and indissoluble part.

In Sir George Foster we are fortunate in having a leader who realizes the value of employment by the Government of skilled technologists to guide and advise our industrial operations. And we have no lack of industrial research problems. Consider the extravagant waste in wood and coal, the possibilities of our smelting and separating metals from our ores, of obtaining potash from pulp and nitrate from the air; the establishment of

a glass and ceramics industry; the opportunities of growing medicinal and oil-bearing plants, and increasing our crop production by scientific methods of agriculture. The Manufacturers Association has always shown itself capable of "action" in matters affecting industrial welfare and development. "Action," prompt, forceful and effective, is the "tank" to override obstructing inertia.

The Price of Paper.

THROUGH the pressure of the newspaper publishers of Canada, the Government has been induced to interfere between the manufacturers and consumers of newsprint paper, and, by threatening to take steps to compel the manufacturers to reduce the price of their commodity, has virtually prescribed the price at which it is to sell. It is the first instance, so far as we are aware, of an attempt at governmental price regulation in Canada.

The publishers are, of course, a very powerful body, and no Government would willingly incur their enmity. On the paper question they are naturally a unit, no matter how far apart individual publications may drift in political controversies. The Government in power may have its journalistic friends and its journalistic enemies, but once a matter affecting the welfare of the press in general arises, and every paper in the country will line up and demand from the Government concessions and privileges which few other classes in the community are powerful enough to secure.

In the price controversy just concluded, the paper manufacturers were opposed by interests which the authorities at Ottawa could not afford to ignore, and, as a natural consequence, they failed in their efforts to maintain prices at a level, justified not alone by the greatly increased costs of production, but by the unprofitable experiences of past years. The public had little, if any, opportunity to decide on the merits of the two sides of the argument, for it was not to be expected that the publishers would print anything in their papers prejudicial to their own interests.

There is no doubt whatever that the cost of paper manufacturing has gone up tremendously during the past two years. In the first place, we have the question of labor. Until a short time ago mills were running on what is known as a two-tour system; that is, two gangs of men were operating the mills, twenty-four hours a day. Today, mills are running on the three-tour system, which requires three gangs of men per day. Besides which there has been an increase of wages of at least ten per cent.

All commodities entering into the manufacture of paper have increased enormously in cost. Machine clothing, in which is included wires and felts, has gone up over one hundred per cent., and these items are not small matters in the bill of costs. The difficulty of maintaining the supply of raw material, including pulp and coal, is a problem of serious import.

When the farmers advance the price of milk, the city milk dealers have to add another cent or two cents a quart

to the price they charge the consumer. When the millers advance the price of flour, the city baker has to add another cent or two cents to the price of the loaf for which thousands of householders are his customers. People in all sorts of business have had to advance their prices. It is the natural course of action, dictated by the principles of sound business, but what do the newspaper publishers do when faced with an advance in the price of paper? Some few, it must be admitted, have put up the selling price of their product slightly, but they are nearly all small papers with small circulations. The big papers, with the big circulations, continue to sell their product at the old rate and, in order to shift the burden, they go to the Government and urge the authorities to compel the paper manufacturers to carry the load.

A few years ago, when paper was a drug on the market and when mills could not dispose of their output at a profit, the law of supply and demand was vociferously applauded by the consumers, and any effort to fix a price which would give a fair profit and reasonable encouragement to the industry was condemned as a nefarious scheme to enrich the manufacturers at the expense of the publishers. To-day, with the demand in excess of the supply, the once highly approved law of demand and supply is looked at askance. It is evidently a law that is in favor when it works one way only.

The ultimate result of the effort to control the price of paper will be to curtail production. Capitalists will not put money into the paper industry if the prospect of an adequate return is not fairly sure and, with increasing demand for paper, a very serious shortage is inevitable. In the long run, therefore, consumers of newsprint may find that it was poor policy to interfere with the natural expansion of an industry, which was destined to play an important part in the development of Canada's resources.

A Great Economy.

A MASTER catalogue, in which can be inserted, as they arrive, price lists, data sheets, specifications and advertising booklets, is the conception of W. L. Chandler, assistant treasurer of the Dodge Sales and Engineering Co., who, under the heading of "A Buyer's Prophecy," tells what he believes will be an important development of the next few years.

The flood of catalogues and price lists, of all sizes and shapes, which descends on the purchasing agent every year is a source of confusion and bewilderment. Lack of uniformity renders systematic arrangement impossible. Absence of any sort of central index makes it impossible to co-ordinate information. The result is that tons of this so-called advertising literature become absolutely worthless and are an economic loss of no small proportions.

Mr. Chandler thinks the day is near at hand when there will be co-operation among manufacturers to secure uniformity in their lists and catalogues. And not only uniformity but combination, for, in his view, there will

be devised a single master catalogue of loose sheet design, in which fresh material, as it arrives, will be regularly placed. Time will be saved in the search for information and money will be saved in the preservation from untimely destruction of the vast quantities of printed matter daily consigned to the waste-paper basket.

"In order to be of the greatest value to the business world," writes Mr. Chandler, "the master catalogue should be worked out through the co-operation of all national trade, engineering and other associations, together with such local organizations as may care to lend assistance.

"This co-operation can, perhaps, be best secured through a conference board composed of representatives of the organizations interested. Such a conference board may formulate certain definite recommendations, outlining the proposed complete plan of operation of the master catalogue. In such a conference board the best interests of all industries, from the standpoints of both buyer and seller, would be served.

"These recommendations may be ratified by the various organizations, and the catalogue will then become a reality as soon as equipment can be installed and loose sheets prepared and distributed.

"There are many forms which might be devised and recommended by such a conference board, but in order to enable the reader to see how such a master catalogue can be realized, I shall describe one of the plans which is practicable.

"The loose sheets may be 8 1/2 x 11 inches. If one such sheet is too small to accommodate the requisite data, a book or booklet of those dimensions may be used, or a larger sheet—an exact multiple of this size—may be folded to this size.

"These loose sheets are to be kept in standard vertical letter files of one or more drawers. These files are to be found in stock now in all large cities and are not limited to any one manufacturer. Being of standard letter size, economy of production is in our favor. Market reports and correspondence pertaining to the different price lists, such as quotations, discounts, or letters giving weights, freight rates or other data, being written on sheets of the same size as the catalogue sheets, may and should be filed with the sheets to which they apply.

"There is no limit to the possible expansion of such a master catalogue. It may consist of one or a thousand drawers, depending upon the needs of its owner.

"The conference board may recommend also a decimal system of indexing this catalogue, somewhat along the lines of the Dewey system used by large libraries for indexing their thousands of books. By this system, a book in one library bears a number which is the same as those borne by all similar books in other libraries.

"The index guide cards being standard, may be carried in stock by all office outfitters along with the cabinets. These may be bought, not necessarily in sets, but by the single piece, as requirements dictate. Thus the catalogue will not be burdened with guides which do not interest the buyer, and yet, as the catalogue expands to keep pace with the business, the guides, when added, will take their proper places in numerical decimal order.

"A permanent joint catalogue committee selected by the conference board, or the conference board itself, may, at regular intervals, publish additional decimal subdivisions of the index to keep pace with the development of the master catalogue idea. Thus, it will be always up-to-date, and of the greatest benefit to both buyer and seller.

"Inasmuch as these letter files provide for the filing of letters with the right hand eleven-inch-edge uppermost,

that edge, then, should carry a heading or some indication of the nature of the data to be found on the sheet. The seller's own interests will prompt him to see that these headings are brief but ample.

"In addition to all this, the master catalogue may be protected against becoming obsolete. The loose sheets may be printed on colored paper, in addition to the date to indicate the year in which each was issued. For example: We will say that all sheets printed in 1917 shall be on white paper and bear the date of issue; those printed in 1918 on yellow paper, together with the date, while other colors may be used for 1919, 1920 and 1921. White will again be used for issues of 1922, and other colors repeated in regular order.

"Thus, five colors will carry through the life of the catalogue. Some white sheets, for example, will be replaced from time to time by those of other colors issued in later years, as the catalogue is kept up-to-date. But how about the reliability of the white sheets still in the catalogue at the close of 1921? They would then be five years old. The color would serve to draw attention to the age of such sheets issued in 1917, and lead to an inquiry as to their right to remain in the catalogue.

"An up-to-date seller would have records of the white sheets of his issue which were still in effect and should know what buyers had them. He would then, during December, 1921, notify them of the fact that such sheets were still in effect and entitled to remain in the catalogue if the buyer should be still interested in such material.

"Upon such advice, the sheet may be stamped by the buyer, 'O.K., 1922,' and left in the catalogue. During January of 1922, the buyer will see that someone goes through his catalogue, searching for white sheets of the issue of 1917, which had not yet received the 'O.K.' stamp. Whenever his interest in the material had ceased, the sheet would be destroyed. If his interest still remained, the buyer would notify each seller about such sheets of his issue as were open to doubt.

"Such advices or inquiries from the buyers to the sellers would naturally result in the sellers notifying the buyers of the dependability of such data or sending new sheets. During January and February of 1922, many of these white sheets will receive the stamp 'O.K., 1922,' or will be replaced by newer sheets. On March 1, 1922, the buyer may destroy any white sheets of the issue of 1917 not bearing the O.K. stamp. Each year the sheets of one color become five years old and are carefully scrutinized by the buyer to determine their value to him.

"In this way, it is possible to prevent the catalogue from becoming obsolete. Such annual overhauling may be done by understudies, provided the discarded sheets are inspected by a competent person before being destroyed.

"On certain classes of material, it is altogether impracticable to depend upon data five years old. In cases of this kind, the particular sections of the catalogue known to contain data pertaining to such material may be revised as often as judgment dictates. The colored sheets lend the same help in a revision of any frequency desired.

"The principal advantage of the color scheme is that the catalogue may be completely revised every five years at the longest, and parts or all of it revised as much oftener as is necessary or desirable.

"In addition to printing price lists, etc., on colored sheets, it may prove advantageous to have the guide cards in colors to indicate those classes of material which are known to be subject to frequent fluctuations, thus requiring equally frequent revision of such portions of the catalogue.

"The use of this standard master catalogue will greatly reduce the waste circulation and expense of printing cata-

logues. It will not limit the quality of the information contained on the sheets or in the books, and will not in any way restrict advertising matter, except that which the seller desires to have the buyer retain in his file.

"A great volume of advertising matter is now directed to those consumers who would have no interest in the master catalogue. A manufacturer of breakfast food, for example, may issue a limited amount of data and price sheets for the master catalogue of jobbers and large buyers. He would not in any way modify his larger use of advertising matter. The sheets or books may be printed from any plates used for bound catalogues, and will give every opportunity for the proper treatment of the subjects involved.

"Under this plan, a seller's catalogue may be printed on paper of a quality equal to that of any book now used for the purpose; the illustrations may be just as effective as desired, and the ink may be of any color or colors to best present the goods. The only restrictions would be as to the size of the sheets or books (thickness not restricted), and the issuance of separate sheets or books where one seller might handle goods of more than one classification.

"Some middlemen issue immense catalogues covering a wide range of material. These catalogues, costing large sums of money, are seldom used in their entirety by any one buyer. Small sections of such books would usually cover the needs of most of the buyers who now have the complete book.

"Then, if such sections were filed under their proper index classifications in the master catalogue, the buyer would be much more apt to consult them than if they were submerged in a large bound book as at present. The buyer's time and the seller's money would both be conserved.

"In some cases, sellers may desire to send both bound volumes and master sheets or books to some of their largest customers. The master catalogue does not interfere with such duplicate distribution on the part of the seller.

"Until such time as the small buyers may equip to use the master catalogue, it will be necessary to issue bound catalogues. It may always be necessary to do so.

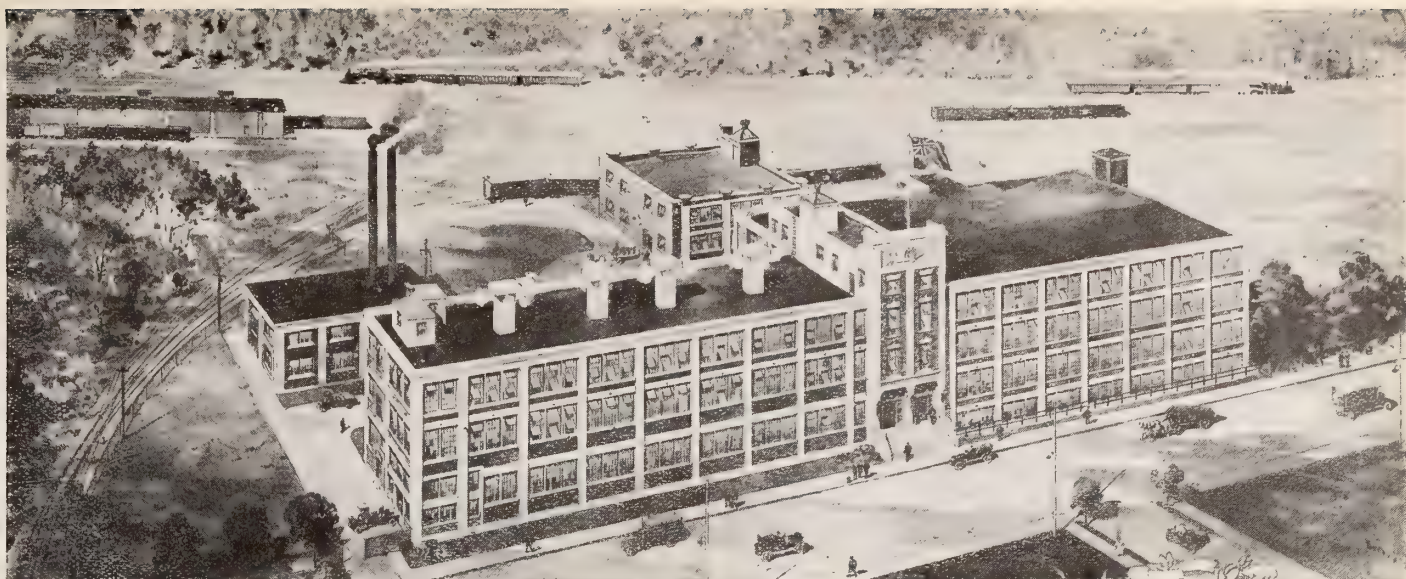
"However, when the seller knows that his loose sheets are going into the master catalogue where the buyer will surely look for, and as surely find them, he will cheerfully supply the sheets to those prepared to use them.

"In time to come, many trade, engineering and other organizations will have large master catalogues containing all sheets which might, in any way, become of value to any of their members. Trade associations may equip their headquarters with master catalogues containing sheets furnished by their members. Thus, a buyer seeking a line of equipment with which he is not familiar, may consult the headquarters of the association representing that industry, and either draw his information from their catalogue or secure from them sheets or books to fit his own master catalogue. The names of trade associations co-operating with the conference board in this way may be printed on the guide cards pertaining to their particular industries, for the benefit of the buyers when seeking information.

"This will greatly expand the fields of usefulness of the various trade associations.

"This prophecy is prompted by a knowledge of the tribulations of printers, advertising men, sellers and buyers.

"Many details which cannot be covered in this brief way will provide the easy operation so necessary for the success of the plan. There is, however, no phase of the situation which has not been at least roughly worked out sufficiently to determine that a master catalogue is a practical possibility."



THE COMPLETED PLANT, AS PICTURED IN THE ARCHITECT'S DRAWING

FEATURES OF A NEW HAMILTON PLANT

A description of the building just erected for the Mercury Mills, Limited

By W. A. CRAICK

IN several respects the new factory of the Mercury Mills, Limited, into which the Company is just moving, is the most up-to-date building of its kind in Canada. It has been erected according to plans which have been perfected after a careful study of the requirements of the industry and in which have been incorporated the latest ideas in knitting mill construction gathered from all over the continent. More than this, the management have had in mind the welfare of their employees and in numerous ways have aimed to increase the efficiency of the workers by equipping the plant with health-promoting and conserving features.

The new factory is located on a six-acre lot in the south-eastern section of the city. Here it is away from the noise and congestion of the down-town districts and from the smoke and grime of the steel-working industries,—in a clean locality where the air is good and the outlook pleasing. In the immediate neighborhood are the manufacturing establishments of Wagstaffe, Limited; the Furnival-New Jam Co., and the Egg-O Baking Powder Co., companies which doubtless sought out the district for similar reasons. The main line of the Toronto, Hamilton & Buffalo Railway Company adjoins the property on which the factory stands, while beyond it rises the steep slope of Hamilton Mountain.

There are at present one large and three small buildings in the plant. The main building has a frontage of 371 feet and is divided into two parts. Of these, one is the mill proper, which comprises the section to the right of the main entrance and consists of three floors and

basement, 176 feet in length by 92 feet in width. The other is the dye house, which extends to the left of the main entrance and is in dimensions 176 by 51 feet. The remaining buildings are the picker house, 69 by 71 feet; the boiler house and a transformer station, all of which are located to the rear of the main building.

Except in the dye house, where the column and girder type of construction has been employed, the plant has been built under the flat slab system of reinforced concrete. The work was started in April, 1916, and while there was still considerable finishing to be done on March 1, the Company was able to instal some machinery and get certain processes under way by that date.

Apart from the wide, roomy, well-lighted floors, which will ensure pleasant working conditions for the employees, heating and ventilation have received special attention. There has been installed one of the humidifying systems, manufactured by the Carrier Engineering Co., of New York. Under this system fresh air is sucked in from outside the building; is heated by passing through steam coils; is washed thoroughly and humidified to the proper degree of saturation by sprays of water, and is then carried through sheet metal ducts to the various floors, where it is discharged at the ceiling level. In order to conserve the heat, as much as possible, it is arranged that warm air can be drawn from the different floors and sent back again after purification.

In the lower illustration on the third page of this article, the reader will note two large brick



An interior view, during course of construction



The building during early stages of construction

ducts on the outside of the building. The corner one is that through which the fresh air is drawn down to the humidifier in the basement. The other is used for the re-circulation of air and for its discharge when exhausted.

By spraying the air with cold water in summer and forcing it through the ducts into the building, it is estimated that the temperature can be kept at least 10 degrees below that of the outside air. What this means in increased efficiency must be evident to any manufacturer employing large numbers of hands.

In order to keep out the cold air in winter and the heat in summer, thereby maintaining the temperature inside at a fairly constant level, a system of double glazing has been adopted. One of the greatest difficulties in the way of doing this heretofore has been the seeming impossibility of preventing condensation between the two panes of glass, the putty running and allowing the air to leak in and out. To overcome this, an S-shaped galvanized iron divider to hold the putty firm, has been devised and this has worked admirably.

The glass used is corrugated and in consequence opaque, but in order to render some relief to the workers and not confine their vision to the comparatively narrow limits of the workroom, a row of panes at the level of vision has been left clear and through these they can see outside whenever they feel inclined to look up.

While on the subject of welfare work, it might be mentioned that the Company have provided something rather unique in the way of a lunch-room. The central section of the building, which contains the main stairway, etc., has been

extended up to a fourth storey, and this fourth storey, which is virtually a small building placed on the roof of the main building, is to be utilized for lunch and rest room purposes. Access will be afforded to the roof, which on one side at least, will be railed in and possibly covered over, to serve as a roof garden and recreation ground. The situation of the building will make the lunch-room and the roof garden particularly attractive.

On each floor ice tanks attached to the water system will provide a constant flow of cold water and thus prevent wastage, which is often considerable in the hot weather, when

water is allowed to flow for some time in order to run off the warm portion lying in the pipes. There is a rest room for women workers on each floor and provision is made for an emergency hospital in the basement, where cases can be treated away from the rest of the employees.

Among the other features of the main building, there may be mentioned the floors, which are of hardwood throughout, laid on creosoted screeds, which in turn rest on a cement and cinder concrete fill. Partitions, which were originally intended to be of metal, are constructed of hardwood, owing to the difficulty of obtaining the former material. Columns and walls are painted white, with a dark green wainscoting. The bases of pillars and all corners where the cement might be chipped off by being hit with trucks, are protected by metal sheeting to a height of four feet or thereabouts.

The building is of course well equipped with elevators, stairways, fire escapes, fire doors and a sprinkler system, while all wiring is encased. Two of the three elevators installed are Otis-Fensom, while the third is a Craig-Ridgway steam hydraulic. What may prove of special interest is a steel lifting beam on the third floor. A series of doors are provided on each floor at the rear, through which machinery may be moved in and out, and directly over these doors the lifting beam is located. The unusual feature about it is that it is adjusted to move in and out on roller bearings. That is to say; it may be pushed out when a load is to be lifted and drawn in when the load reaches the level of the floor where it is to be deposited.

The dye house presents some novel features. Perhaps the most striking is the provision of a false ceiling, sloping up from both sides to the centre and made of asbestos board. A heating and ventilating system, somewhat similar to that in the mill proper, is calculated to draw off the steam and fumes from the dye house and carry it up four large ducts, placed at intervals along the room, thereby rendering the dye house a fit place to work in. The vats and other apparatus are placed over concrete trenches, which connect with a main trench, through which the dyes are carried off to the sewer. In short, the dye house has been planned and equipped to produce the best results with the least danger of injuring the health of the workmen.

A tunnel for conveying steam to the dye house connects this end of the main building with the boiler house. Here two 150 h.p. Jenckes return tubular boilers are installed. The boilers are placed so that tubes may be removed when necessary without having to draw them out through doors or windows; in other words the boiler house is very roomy. In the same building provision is made for a



Preparing the first floor for cement pouring

small machine shop for general repairs to the plant and a pump room connecting with the tunnel to the dye house.

The picker house has no special features, except that particular pains have been taken to make it fire-proof. Thus, the rag-picking machine, which is the greatest fire risk on the premises, is set up in a room by itself, so that if the rags going through it should ignite, they would burn out without doing any damage to the rest of the plant.

The Mercury Mills, Limited, was established in 1913 by John Penman, of Paris, who is president of the Company and personally interested in its development. H. G. Smith is the secretary-treasurer. The Company specializes in the manufacture of hosiery and underwear, and in the four years since its establishment has enjoyed rapid growth. Starting in a building on Park Street, Hamilton, it outgrew these premises and had to place machinery in other buildings, both in Hamilton and Dundas, to accommodate its expanding business. The new building, just erected, has been the necessary outcome of these changed conditions. It will enable the Company to concentrate its activities once more in a single plant.

AUSTRALIAN COMMONWEALTH INCOME TAX ON OVERSEA FIRMS, AMENDED.

Under the Act as passed in 1915, if an oversea firm employed a representative or selling agent, in Australia, such oversea firm was taxable on an income equivalent to 5% of the price at which his representative sold the goods.

This tax was attacked as unjust; one of the representatives of the British manufacturers stated these objections in a nutshell, as follows:—

"Summed up, once more we say, the tax is unjust because it only reaches those who reside here, and spend the British manufacturers' money in the country, while exempting those competitors who also sell goods here, but spend no money and employ another method. It is therefore a stupid tax on enterprise. The tax also fails to reach Americans, Japanese, or others who factor their goods. It is calculated to defeat its own ends in driving away representatives whose manufacturing friends will refuse to pay such an unjust imposition. A fair parallel case would be that of the British Government imposing a tax on the brokers in London who sell our wool and wheat and fruit, and telling them 'we will give you an indemnity against your Australian clients, if you deduct the amount from your account sales.' How much this class of legislation injures the financial credit of this country only those of us who know the results by experience can tell."

Owing to the difficulties in making fairly uniform application of this taxation principle the Government appears to have decided to waive this method of collecting revenue. In this connection the announcement of the "Australian Association of British Manufacturers and their Representatives" is as follows:—

"I have pleasure in advising you that the efforts of this Association have been successful in having Section 15 of the Income Tax Assessment Act, 1915, repealed.

"You will recollect that Section 15 provided that in the case of a person selling goods in Australia on account of a person not resident in Australia the principal should be deemed to have derived from such



Rear view of the plant on February 1st

sale a taxable income of five per centum upon the price at which the goods were sold, that the person selling the goods should be personally liable for the payment of the tax to the extent of the tax payable on goods sold by him after 30th June, 1915, and that goods should be deemed to be sold in Australia on account of a person not resident in Australia if any person in Australia received a commission in respect of the sale of the goods or was paid a salary for obtaining orders for or for influencing the sale of the goods.

"Under the provisions of the Act, as now amended, neither the agent nor the overseas principal are taxable on any profit made by the overseas principal on the sale of goods through an agent in Australia."

LIEUT. COCKSHUTT'S DEATH.

Missing since June 2, 1916, it is now officially announced that Lieut. Harvey Cockshutt, of Brantford, is "presumed to be dead." Soon after war broke out Lieut. Cockshutt, who was at the time both a director and foreign sales manager of the Cockshutt Plow Co., volunteered his services, going overseas with the 4th C.M.R. The regiment was turned into infantry and on June 2, 1916, held a portion of the Canadian front line at Ypres. In leading his men, Lieut. Cockshutt was wounded severely. His men, after binding up his wounds to the best of their ability, placed him in a shell-hole and sand-bagged the position. That was the last heard of him. After careful search to locate him in the hospitals and prison camps in Germany, it was finally discovered that he had been killed.



West end of the knitting mill

FITTING RETURNED SOLDIERS FOR INDUSTRY

The Canadian Manufacturer's Interest in their Restoration

By O. N. E.

THE Canadian manufacturer is doubly interested in the returned soldier question. As a citizen, he is keenly interested in seeing the fullest justice done to his fellow-citizens who have risked their lives for him and his country. As a manufacturer, he is interested in seeing that the manpower of the country is sufficient, in quality and quantity, to maintain and develop its industries. This article tells something of what is being done to achieve both these objects.

The ex-soldiers to be dealt with will be of two classes, the able-bodied and the disabled. Some able-bodied men have already returned, but only a few hundred,—chiefly men who were enrolled for special duties with extra pay and came home rather than accept the same rate as their comrades. The bulk of the able-bodied will come back after the war. Their return can only be by degrees; but, even so, it will create a tremendous problem and it is none too soon to devise measures for its solution.

The Soldier and the Land.

There is no doubt that the development of agriculture is the country's greatest need; and the return of these men will offer an opportunity, which should be eagerly seized, to promote this development. If the soldiers undertaking to settle on land are properly trained, and if a broad-minded policy is adopted to improve the methods and profits of agriculture and the social conditions of rural life, then it is not unreasonable to expect several thousand soldiers not only to go on the land but to stay on it and develop it. But even if our land settlement schemes are perfect, and hedged about with every precaution against failure, and carried out in the most businesslike way by practical men, they cannot provide for any large proportion of the soldiers.

It is safe to say that the great majority of the total will return to work of some kind in the towns. Some of these have had their old positions kept open for them, but most will have to be provided for.

On the initiative of the Military Hospitals Commission, Provincial Commissions were long ago formed and undertook the duty of helping returned soldiers to find employment. These Commissions have been able to place practically all the returned men so far ready for work. In some of the Western Provinces, however, it is hard to find positions enough, and it is to be feared that many of the men

placed, in every province, are not in the positions most suitable for them. If a man is set to work for which he is not fully qualified, or work which does not fully employ his capacity, this means waste of power.

The present system of organization will certainly be unequal to the task of finding work for the mass of able-bodied men returning after the war, no matter how gradually demobilization may be carried out. A Dominion-wide system, with all the provincial and local organizations co-ordinated and co-operating, will be required. As a first step, the head officials of the Provincial Commissions might very well come together, compare notes, and frame or suggest a general plan based on the results of their experience.

The Chain of Hospitals.

Now let us turn to the work of the Military Hospitals Commission, and see what is being done to restore the powers of the men returning to Canada disabled.

The Commission has established a chain of convalescent hospitals, stretching across the Dominion from Sydney, N.S., to Sidney, B.C., besides sanatoria for consumptives. On February 3rd, it had under its care 1,930 patients in hospitals and 494 in sanatoria, besides 105 in other institutions, and 1,034 out-patients, making a total of 3,563.

Some of the hospitals are large private houses, lent by their owners.

Others were public in-

stitutions. These include the old Bishop Strachan and Knox Colleges, Toronto; part of the Victoria Hospital at London; the old Victoria College building at Cobourg, lent by the Ontario Government for neurasthenic cases, and the Naval Hospital at Esquimalt, B.C.

For orthopaedic cases, the Commission has taken over the Salvation Army's new training college at Toronto, where also an artificial limb factory has been established. All limbs and kindred appliances needed will be supplied free of charge.

For consumptives, the Commission has sanatoria at Ste. Agathe, Que.; Kitchener, Ont.; Frank, Alta., and Balfour, B.C.; is adding special buildings for military patients to the Mowat Sanatorium, Kingston; the Mountain Sanatorium, Hamilton; the Kentville Sanatorium, N.S.; the Ninette Sanatorium, Man., and Byron Sanatorium, London; and pays for soldiers also at sanatoria in other places. The sanatorium accommodation is now 620 and is being raised to 1,164.



One-armed Woodworker
Military Convalescent Hospital, Esquimalt, B.C.

For "active" hospital or bed cases, which will soon be arriving at the rate of perhaps 300 a week, the Commission has already arranged for 4,364 beds, at a number of points where the best medical and surgical skill will be available. These beds are mostly in existing hospitals, but Dalhousie University at Halifax will accommodate 125; the Armoury, at St. John, N.B., 500; the Arts Building and Convocation Hall of Queen's University, Kingston, 550; while a 600-bed hospital is to be erected close to the General Hospital in Winnipeg.

Restoration by Occupation.

These "active" hospital cases will in due course graduate into the convalescent class, for which increased accommodation will therefore be required. The Commission is increasing its convalescent accommodation from 2,955 to 5,155. It has secured the Ontario Government's great institutions at Whitby and Guelph, with accommodation for 1,200 and 500 respectively; the old Manitoba Agricultural College, for 600; the main building of Dalhousie University at Halifax, for 200; and the Saskatoon Y.M.C.A., for 150. The total accommodation, available or in sight, is 10,683, not counting the Clearing Depot at Quebec, where there is room for 600. A convalescent home used to be thought of only as a place of rest and passive recuperation. The science of healing, however, has made great strides of late, and one of the lessons learned is that the cure is much more speedy and thorough if patients are actively occupied—of course according to the strength of each individual. In connection with most of the convalescent hospitals, therefore, various classes have been formed. They are generally held at the hospitals themselves, but sometimes at the local technical schools. The men receive instruction and practice in arithmetic, language, penmanship, and other general subjects; in book-keeping, shorthand and typewriting; and in arts and crafts work of various types, such as wood-working, light metal working, mechanical drawing, clay modeling, and shoe repairing. At several centres instruction in automobile



Carpentry Class

St. Chad's Military Convalescent Hospital, Regina, Sask.

and internal combustion engine work is given. And the outdoor occupations include vegetable and flower gardening, poultry-keeping and bee-keeping. Of course, it must not be supposed that the whole of the occupations mentioned are carried on at any one institution.

Physical exercises, conducted under medical supervision by trained instructors, prove equally valuable. And all these things, supplementing the work of physicians and surgeons, of nurses and masseurs, restore strength and give renewed tone to body and mind.

Incidentally, they do much more. They increase the patient's capacity for earning a living, by developing his general intelligence and technical skill. Many men, in fact, have been enabled to take better positions than they ever had before.

Scores of men have already passed the Civil

Service examinations, after instruction in these hospitals. The Federal and Provincial Governments and municipal authorities give preference to returned soldiers in appointing to public positions. Some of the sedentary occupations mentioned are clearly qualified to improve men's chances of success in commercial offices. And it is found that a little skill in mechanical drawing, with ability to read and interpret a blue print, and a knowledge of simple shop arithmetic or mathematics, enable ordinary mechanics to become foremen or superintendents.

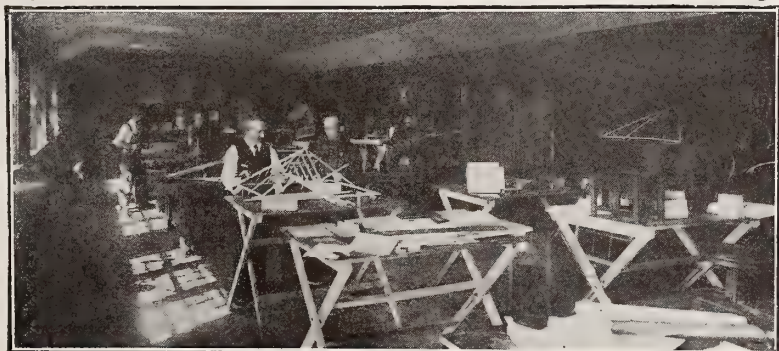
The Rest and Work Cure for Consumptives.

It may be remarked here that occupations like shoe-repairing and toy-making offer a poor prospect in this country. And a creation or revival of cottage industries, attractive as it sounds, can hardly be expected on a scale large enough to support any considerable number of men. Yet there are a good many for whom the countryside would be far better than the town, though they may have neither capacity nor inclination for farm work. Such men and their families might live happily and prosperously in or around our villages, on the combined proceeds of cottage industries, poultry and bee-keeping, home



Arts and Crafts Class

Parks Military Convalescent Hospital, St. John, N.B.



Arts and Crafts Shop

Deer Lodge Military Convalescent Hospital, Winnipeg, Man.



Resting but Busy

Laurentide Inn Sanatorium, Ste. Agathe, Que.

gardening, and their pension. Workshops like those at the hospitals are also being started at the sanatoria for consumptives, with an equally good effect on the health, happiness and capacity of the patients. Light occupations are provided even for those who cannot get up, and greatly help to prevent the tedium and depressing effect of long inactivity. Glimpses of invalid soldiers at work at Ste. Agathe are furnished by two of the illustrations.

The discovery of hundreds of consumptives among enlisted men, who ought to be above the average in health, should stimulate all our governments to an energetic and systematic campaign against this "White plague." Tuberculosis can be stamped out, or confined within the narrowest limits, as surely as smallpox, in any country with the resources of science at its command.

Canada suffers a terrible loss every year through the long illness and ultimate death of consumptive citizens, not to speak of the personal misery involved. It will pay the country to extend to the tuberculous population in general the system now so effectively employed for the cure of soldiers.

Training for New Occupations.

Any soldier whose disability incapacitates him for his former work is enabled and encouraged to take

an extended course of re-education for some new occupation. The patient is assisted in the choice of such an occupation by the advice of medical and vocational experts. His training is free, and while it is going on—indeed, for a month longer than that—the Dominion Government maintains both the man and his family.

One of the most important points to be kept in mind is the necessity of directing men towards occupations not likely to be overcrowded. A trade or occupation which provides plenty of openings just now may experience a glut when the army is disbanded. Clerical work, for instance, is likely to be at a discount. It seems very advisable to increase the men's capacity for trades requiring both manual and mental skill.

That may be said without hesitation, at the risk of provoking the easy retort that manufacturers are specially interested in an increased supply of such skill. They are; and so is the country. But if there is one thing that should be repudiated, it is a desire to exploit the hospitals or the training system for the benefit of manufacturers, or any other class. Already some employers, not necessarily manufacturers, are charged with attempting to exploit our injured soldier-citizens by paying them less than they would pay to ordinary men, justifying this by the fact that the pension makes up the difference. The Government, in its pension regulations, explicitly promises that "no deduction shall be made from the amount awarded to the pensioner owing to his having undertaken work or perfected himself in some form of industry." This is clearly right. Any other course would discourage industry. And any employer who takes advantage of a man's receipt of a pension, by cutting down his wages, is contravening the spirit of the wise regulation just quoted.

Forbearance and Co-operation Needed.

It stands to reason that a man who has been "knocked out" and has spent months in hospital, even in a hospital where everything possible is done to brace him up, does not come to his work, whether it is the old job or a new one, in the same condition and with the same habits as he had before he enlisted. He has, of course, gained something from his military experience. "I am infinitely the better for it in every way," said a friend of ours, with the marks of seven wounds on his body, and one eye gone. The returned soldier has probably gained both in initiative and in discipline; but he is out of the habit of steady work of the kind now facing him, and, not unnaturally, he often feels inclined to "have a good time," in reaction from the bad time he has undergone.

In such cases, employers will feel the need of exercising patience.

Remember,—even the men who seem to find it hardest to settle down in steady work have not been slack in defending us at the front, and it is not to be feared that they will fall into the rank of slackers now. Give them a chance, and a big chance. As for the great majority, steady and sober in spite of all temptations, they would scorn the idea that any such appeal need be made on their behalf.

As the Minister of Agriculture said in his recent message to the farmers of the Dominion: "If all labor is not efficient, there can at least be patience and forbearance where partial efficiency is accompanied by willingness. There is no place in the State now for either half-hearted service or ill-



Class in Mechanical Drawing

Red Cross Military Convalescent Hospital, Calgary, Alta.

founded criticism. In the common task which faces the country, co-operation should be the watchword."

Yes, patience with labor that is inefficient but willing. Yet, while we are patient with the man, we cannot love his inefficiency—nor can he. We must help him to conquer it.

Miracles of Surgery and Education.

It is to be hoped that, whenever possible, special attention will be given to the ex-soldier by his employer, encouraging him still further to increase the technical skill acquired in hospital or elsewhere, and this progress will be as much for his own benefit as for his employer's. Manufacturers and other employers, moreover, should, at this critical stage of Canada's history, insist on a vigorous national organization of technical instruction. What has to be immediately tackled is the question of technical instruction for returned soldiers. But there is no reason why this should not be the starting point, as it certainly gives the opportunity, for a new movement towards technical efficiency in the whole population. As a beginning, let the members of each particular trade get together and advise practical measures to meet the active needs of that trade.

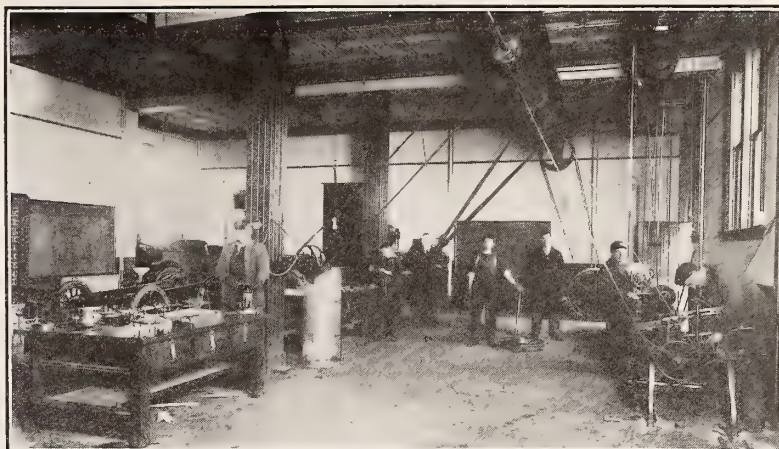
Happily, very few of our returned men are so disabled that they cannot earn a good living. The miracles of surgical science, of which we have all heard, are largely to be thanked for this. Surgical and educational science acting in harmony are working greater miracles still. As an effect of combined "functional" and "professional" re-education, the stump of an amputated arm acquires a cleverness, so to speak, astonishing even to the owner; and, with or without the ingenious artificial hand or hand-substitute, is found capable of doing seemingly impossible things.

If a man, in spite of all that can be done for him, cannot "keep his end up" with his fellow-workers, it is no kindness to give him the same work to do. He will be handicapped from the beginning; and on the return of the able-bodied workers in thousands the effect of his handicap will be still more seriously felt. The number of men thus handicapped is not nearly so large as might have been expected from the number of wounded, or as it would have been with the same number of wounded in any previous war. Even the loss of an arm, grievous as it is, does not cause all the disability it once entailed. As already suggested, many things commonly done with two arms can nowadays be done absolutely as well with one, when the man has had his remaining muscles developed, trained, and supplemented by a modern mechanical appliance.

The End and the Means.

The work of the Commission may be open to criticism in detail here and there. Otherwise the Commissioners and their staff would be endowed with more than human gifts and graces. But, looking fairly and squarely at the great complexity of the problem, the many difficulties that have had to be overcome, and the fact that the whole business was absolutely new in the country's experience, the progress of the work shows a high degree of enterprise and efficiency.

The end aimed at is nothing less than the restoration of every man to his utmost capacity for self-supporting and self-respecting citizenship. It is a good end, and, so far as we can see, it is being sought by practical and enlightened methods.



Motor Mechanics Class

Held at the Provincial Institute of Technology, Calgary, Alta.

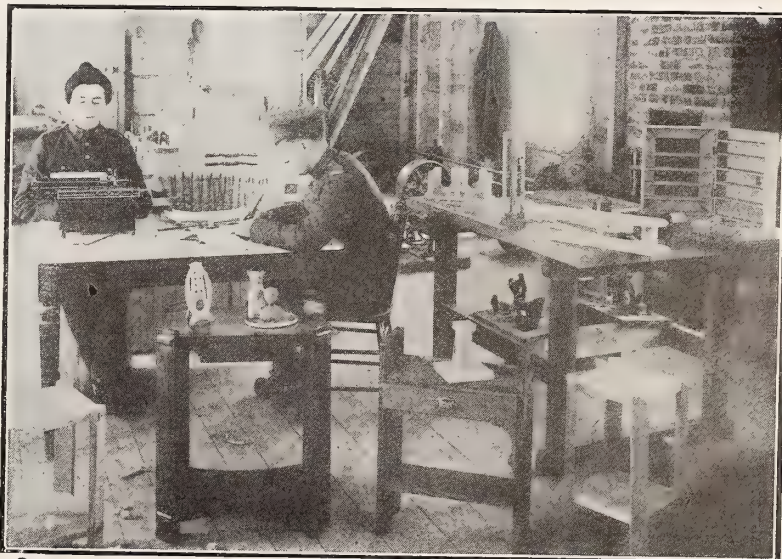
It is more than a good object,—it is imperatively necessary for the country's welfare. We sometimes let our minds wander to renewed dreams of prosperity through immigration. The tide of immigration will be flowing in again, one of these days, without a doubt; and it is none too soon to improve our plans for absorbing and utilizing it. But the great duty of the hour is to concentrate on the development and preservation of the human resources we already possess.

Canada's soldiers risked their lives for their country. They get pensions in proportion to the power they lost in our service. But the country owes them a debt that mere money cannot pay. The debt must be paid, to begin with, in power—old power restored, or new powers developed to make up for any totally lost. Canada owes that to her injured sons, and owes it to herself.

Even if simple gratitude and honesty failed to make us do our best for men who did their best for us—we could not afford to do otherwise. The country cannot spare their abilities.

When the restored men are ready for work, they will want a man's job, and not a boy's job. The country must see that they get it. And "the country" means you and me.

If we do our duty by them, if we back them up, the brave men who have crowned their country with honor in the fight will crown her with prosperity when the fight is done.



Corner of the Workshop

Laurentide Inn Sanatorium, Ste. Agathe, Que.

THE MANUFACTURER'S RIGHT TO FIX RESALE PRICES

This right to be challenged in the Canadian House of Commons—How the principle of price maintenance is viewed by manufacturers, retailers and consumers

By JOHN C. KIRKWOOD

HAS the manufacturer of a standardized, identified product a right to fix and enforce its resale or retail price?

In Canada he has—with certain limitations.

In the United States he has not.

In Belgium, Denmark, Germany and France he has.

In Canada the right of the manufacturer to fix the resale price of his product may be taken away from him, for Mr. W. E. Knowles, Liberal member for Moose Jaw, in the House of Commons, has submitted a bill which, if it becomes law, will make it a criminal offence for a manufacturer to enter into any agreement whatsoever with jobbers or retailers regarding fixed resale prices for his product. One professed object of Mr. Knowles in submitting his bill is to lower the cost of living, it being affirmed or assumed that the principle of fixed retail prices tends to raise the cost of goods to the consumer.

The thought behind Mr. Knowles's bill is that the retailer shall be permitted to fix his own resale prices, without regard to the manufacturer; and the premise is that if the retailer is left free to make the resale price without dictation, he will probably sell to the consumer at lower figures than those which manufacturers would fix and enforce. This is tantamount to declaring that the prices which manufacturers fix, if and when they have this right, are unfairly and unreasonably high, and savor of the nature of a conspiracy or combine to exact from consumers excessive prices—this for the greater enrichment, not of retailers, but of the manufacturers themselves.

Is Price Maintenance a Bad Thing?

It is well worth while, therefore, to enquire into the pros and cons of this question:—Has the manufacturer a right to fix and enforce the resale price of his product? And of the related question:—Is price maintenance, as it is called, bad for the retailer and for the consumer?

Price maintenance, let it be said at the outset, is opposed to price-cutting. So our study becomes, in measure, an enquiry into merchandising methods and into their effects immediate and remote.

Is price-cutting a benefit to all concerned? Does price maintenance conserve the interests of all concerned? These are two questions calling for answers. One question must be answered, No. One, Yes. To which question shall the Yes answer be given?

Superficially, Price Maintenance Looks Wrong

On the face of things it seems reasonable to conclude that it is good for the consumer to be able to buy standardized, identified goods at cut prices: that he can buy, for example, Fellow's Hypophosphites for 87 cents as against the \$1.50 price printed on the package; or Arrow collars at two for 25 cents as against the advertised price of two for 30 cents; or Ivory Soap for 3 cents a cake as against the stated price of 5 cents a cake; or a Ford motor car, or any other car, for less than the manufacturer's advertised price.

On the face of things it seems reasonable to conclude that when the retailer has bought and paid for a manufacturer's

product, he owns the goods outright and is free to sell them at any price he likes.

On the face of things it appears to be a form of coercion, smacking of combine practices, for a manufacturer to fix the resale price of his product, and to require both jobbers and retailers to be parties to an agreement by which the resale prices fixed by the manufacturer shall be maintained.

But looking at things superficially is neither a good nor a safe way to arrive at sound conclusions. One must do some digging and some wide surveying to form accurate judgments and to make safe inferences.

I.

Price Maintenance as the Manufacturer Sees It

Let us consider the problem of price maintenance from the standpoint of the manufacturer of a standardized, identified product. By "standardized" is meant a product of a known and maintained standard of quality. By "identified" is meant a trade-marked or branded article well known to the distributing trades and to the consuming public, probably as the result of long and extensive advertising.

Speaking generally, the interests of the manufacturer of a standardized, identified product are conserved and promoted when the resale price, the price fixed by him, is faithfully and universally maintained. This means that when the resale price fixed by the manufacturer is cut by the retailer, his interests and business are injured, perhaps not immediately, but ultimately—this by lessened sales for his product and by a lowering of the commercial value of his trade-mark.

Some illustrations will make this clearer:

The Story of a Cut-Price Soap

In England a very famous and extensively advertised toilet soap was price-cut so generally that the manufacturer's fixed price could no longer be obtained; and the cut price represented a most inadequate dealer's profit. The result was that the great majority of retailers, while forced by advertising and demand to stock the soap, ceased to display it prominently and sought diligently to sell other toilet soaps yielding them a desired and ample profit. Also, since the cut price of the soap in question had become the prevailing price, the original price-cutters lost the early advantage of their price-cutting: namely, trade attraction by the magnet of a price lower than that given by other dealers. So the cut-price soap ceased to be interesting to them.

Thus there developed, in regard to this particular soap, a tacit and unorganized conspiracy to thwart and divert demand—this by giving the soap no display, and by a deliberate effort to sell more profitable lines. In the course of time the manufacturer's output was greatly reduced, and likewise and as a consequence, the good-will value of his business.

The price-cutting had other notable and significant results. In the end no retailer benefited by the continuance of the cut price, but rather was led, at a cost of time and energy, to resist specific consumer's demand and to divert it to other soaps less desired and perhaps less good. Also, the consumer, in the end, was not benefited by the price-cutting,

for an article which he had learned to buy and prefer became increasingly hard to get; and consumers, as a whole, were guided by dealers into buying higher-priced soaps of no better, perhaps poorer, quality.

That is, consumers enjoyed a temporary advantage, in the end to lose it and to be required to pay full prices for soaps less desired, and perhaps less desirable, than the soap which advertising and use had led them to know, want and prefer.

Had this soap-maker fixed and enforced the resale price of his product, price-cutting would not have developed, retailers would have been assured full profits, customers' demands and preferences would have been met without friction, and trade conditions generally would have been stabilized. Also, the manufacturer would have reaped the full and due reward of his initiative; of his expenditures on advertising and trade calls; and of his high purpose, successfully achieved, to supply the public with a soap of superior quality.

A Sad-Iron Maker's Experience

Here is another illustration taken from actual history, and designed to show how price-cutting works to the injury and loss of manufacturer, retailer and consumer; and how a policy of price maintenance corrected evils and served the welfare of each of these three classes.

The makers of an asbestos sad-iron originally put their goods on the market without a fixed price. The sad-iron was not nationally advertised. Some dealers pushed the goods, making an exorbitant profit; while others cut the price. Many dealers did not carry the line at all because of the price-cutters. Later, the average price at which the iron was sold was taken as the price to be maintained, and was advertised to the consumer. Distribution was immediately strengthened; and, while some dealers made less profit per set than formerly, they made more money in the end because it cost less to sell the irons. Moreover, dealers who had not handled these irons before now took them on, because the price was protected. To-day the sales of this manufacturer (in Dayton, O.) amount to 500,000 sets of sad-irons annually. These great sales indicate an article of desire and advantage which was kept from a large section of the public as a consequence of indifferent distribution, the result of price-cutting.

The Case of the Ingersoll Dollar Watch

Let us consider a third illustration of the points we are endeavoring to make: namely, the manufacturer suffers loss and hurt when his standardized, identified product becomes the prey of price-cutters; and that along with the manufacturer both the retailer and the consumer are not well served when price-cutting flourishes. The Ingersoll Watch is sold in upwards of 100,000 stores all over the country. Included is a very large number of small country stores which handle the Ingersoll watch because the price is the same everywhere, and there is no inducement for their customers to go elsewhere for this watch. The margin of profit for these stores is not great, but it is absolutely sure, and the goods are so widely advertised and so trusted that a fifteen-year old girl at five dollars a week can sell them as well as can a high-priced salesman.

But let a big store cut the price, and inevitably the little fellow must discontinue the line—he cannot afford to carry it. By and by distribution would concentrate in a few of the larger stores, and when these stores became tired of carrying the Ingersoll watch, sold by them at an inconsiderable profit, as they probably would, the distribution would be quite gone. Not only this: consumers would have become educated to expect a lower price, and this obstacle would have to be

overcome in any fresh endeavor to restore distribution. Also, consumers would have difficulty in obtaining this desired and trusted watch at all.

This suppositious case illustrates how a manufacturer's business might be taken away from him: first by reducing the number of his distributors; next by having his business at the mercy of a few big stores who, in the end, might throw out his line altogether, so putting the manufacturer in the position of having to begin all over again; with probably depleted capital, with a lowered prestige, with a prevalent disinclination on the part of dealers to stock his line; and with inability to give dealers any sound assurance that the previous sorry history would not be repeated.

The Ill Consequences of Price-Cutting

The conclusions to be drawn from the foregoing illustrations are that price-cutting in its consequences injures the manufacturer of a standardized, identified product; fails ultimately to advantage retailers; deprives in the long run the consumer of his ability and right to obtain desired and desirable commodities; and leads the dealer to offer, and the customer to be served with an article less wanted and perhaps less good, at a price which pays the dealer a full, perhaps an excessive, profit. The question suggests itself: whether it is better and more in the interests of the consumer, for the manufacturer to fix the resale price, or for the retailer to do so? Which method is the consumer likely to prefer?

II.

Price Maintenance as the Retailer Views It

Let us now look at the problem of price maintenance through the spectacles of the retailer.

Do retailers want price maintenance or do they prefer to have the liberty and right to sell at any price pleasing to themselves? Do they feel that their own welfare is conserved by the price maintenance policy; or do they favor the practice of price-cutting—by themselves and by their competitors?

Fortunately for the integrity of our argument in favor of the principle of price maintenance, the retailers who have considered this question have given a verdict; they have declared their will in this matter in very large numbers and through mediums of power and repute. Not only have they spoken clearly and strongly in favor of price maintenance, but they have joined together in an organized way to demand price maintenance—this from the law-makers, and this in Belgium, Denmark, Germany, France and the United States, and this in Canada, also.

In the United States numerous individual firms have put the question to the retailers of their goods: Are you in favor of price maintenance? and the answers have come back in great volume and unanimity—Yes.

A straw vote of their dealers was taken by the makers of Kellogg's Toasted Corn Flakes, and 99.44 per cent. of those who voted favored the fixed resale price. 1,405 votes from every State in the Union were received, and 1,397 were in favor of the fixed price, leaving only eight holding contrary views.

The Eastman Kodak Company put the matter of price maintenance to their dealers, and of those reporting (90.75 per cent. of the entire list), over 98 per cent. favored the price maintenance idea.

The A. J. Reach Co., makers of baseballs and sporting goods, received answers from 90 per cent. of the retailers carrying their goods, and 98 per cent. of these voted for price maintenance.

A similar census taken by the Waterman Fountain Pen Co. showed 98 per cent. favoring the principle of price maintenance.

In 6,000 votes cast by retail jewellers in a poll taken by the Hamilton Watch Co., there were only three opposed to the idea of a fixed resale price.

Nearly 600 Retailers' Associations Favor Price Maintenance

Of greater significance and more convincing than these several individual instances is the fact that all of the National Retailers' Associations of the United States, with a single exception, have gone on record as favoring the principle of price maintenance; and that practically all State retailers' associations have done likewise. To be more specific: the principle of price maintenance has been officially endorsed by 56 national retailers' associations, by 23 sectional retailers' associations, by 174 State retailers' associations and by 301 local retailers' associations—a total of 554 retailers' associations. Only the department stores association is opposed to the principle of price maintenance.

Surely nothing further need be said as to where stand those retailers who have dug into this whole question: Which is better—fixed and maintained resale prices, or freedom to cut prices?

III.

The Consumer and Price Maintenance

Consumers have declared themselves on this question of price maintenance, and have endorsed the position of manufacturers of standardized, identified goods in their desire and effort to have resale prices fixed and enforced.

Let the following two illustrations of the consumer's attitude suffice for this time.

Mrs. Christine Frederick, a widely known household efficiency expert and investigator of consumer conditions, the consulting household editor of *The Ladies' Home Journal*, *The New York Evening Sun*, *Successful Farming*, and many other publications, believes that price maintenance is calculated to promote the highest interests of the consumer and will result in the most efficient and economical buying methods. Her definitely expressed opinions and argument are a matter of public record in the archives of the Government at Washington. She speaks not for herself alone, but also for many millions of American women.

The National Housewives' League, representing the organized consumer, with members in every state of the Union, is emphatically in favor of the principle of price maintenance. The affirmation of this body of women, representing enlightened women and voicing informed opinion, is that price maintenance

Will promote high manufacturing and marketing standards;

Will tend to produce better qualities of merchandise.

Will protect the dealer, the honest manufacturer, and the home consumer;

Will protect and foster fine methods and sound economic conditions;

Will tend to eliminate goods of unknown and deceptive quality;

Will eliminate misleading advertisements and substitutions, bargain-hunting, unintelligent consumption and overcharging.

These are the conclusions of representatives of consumers—women chiefly—who have studied deeply the whole big

question of resale prices; and it is significant in the extreme that the informed opinion of the consuming class applauds price maintenance, and fails to see in price-cutting a gain and an advantage to consumers in excess of the gain to them of prices fixed and enforced by the manufacturer; but on the contrary see and declare that price maintenance is good for the consumer's pocket book and welfare, and for the general good of the entire community.

IV.

Price Maintenance in Canada

In Canada, as has already been stated, a bill is being presented to the House of Commons whose object is to forbid manufacturers in Canada to fix and enforce the resale price of their products; and in the light of the foregoing, one cannot escape the thought that the proposer of the bill has been led to conceive and submit it out of a lack of knowledge of all that his bill implies and involves.

In the United States, singularly enough, Congress is considering a bill diametrically opposite in its essence and intent to the bill proposed by Mr. Knowles.

The Stephens Bill as it is known, is designed to restore to manufacturers of standardized, identified goods which do not constitute a monopoly, the right to fix the resale price. This right to fix the resale price was recognized until a few years ago. For years the decisions of the Supreme Court of the United States gave countenance to the general principle that a manufacturer could sell his goods with the resale price fixed. Then a recent decision of the Supreme Court in the matter of a specific case submitted for decision, revised previous decisions; and there is a very widespread opinion that the Supreme Court made both a legal and a constitutional error. The Stephens Bill is designed to clarify the law and to restore rights taken away by faulty laws and by judges who have misapprehended the intention of the law.

The Stephens Bill has been having the most earnest consideration of Congress ever since its introduction two or more years ago. This fact in itself is evidence of how important in the esteem of Congress are the whole question of price maintenance, and the issues involved in the Stephens Bill.

One asks—Are the members of the Canadian House of Commons prepared to discuss the Knowles Bill intelligently and profoundly? Is it the intention to stampede this bill through Parliament? Are manufacturers and retailers and consumers to be given an opportunity to state their views to a special committee before final and irrevocable action on the bill shall be taken? Are Canadian manufacturers and retailers alive to or concerned with the significance of the Knowles Bill as it will affect their welfare, now and ultimately, in the event of its becoming law?

A definite answer to this last question can be given. In February a convention of practically all the organized commercial associations of Canada was held in Ottawa to consider the Knowles Bill and other matters affecting the interests of those engaged in manufacturing and distribution. This convention sent delegates to meet with the Premier and members of his Cabinet, and these representatives of organized commerce were given desired assurances.

The chances are that the Knowles Bill will receive an effectual challenge when it comes up for discussion. At the same time danger remains, and the situation calls for enlightened champions of the manufacturers' right to fix and enforce the resale price of his product—this when he wishes the resale price maintained.

THE BUSINESS MAN AND FOREIGN EXCHANGE

An elucidation of a subject which sometimes presents knotty problems to the manufacturer

By VICTOR ROSS

(Reprinted from the Board of Trade News.)

WHEN the banks were quoting a premium of more than 1 per cent. on New York funds, as they were recently, the exchange problem again became troublesome to Canadian merchants and others having occasion to remit funds to the United States. As a considerable number of business men have but a hazy idea of the mechanism of the exchange markets, it will perhaps be worth while to discuss the financial operations that are necessitated when funds are transferred one way or the other between Canada and other countries. For us the most important department of foreign exchange is that covering our financial transactions with New York—the quotations here for sterling exchange are merely the New York quotations for sterling adjusted in accordance with the premium or discount in Montreal and Toronto on American funds.

Now the theory on which the banks proceed when fixing their exchange rates is this: First it is assumed that the balance carried with each foreign correspondent should be kept within certain well defined limits. So, if the bank sells a large amount of exchange on a certain foreign correspondent it will probably mean that the balance carried with this correspondent becomes depleted to that extent and must be restored, perhaps, through buying a like amount of exchange in the market at prevailing rates. On the other hand if the bank buys a large amount of exchange, its balance at the correspondent's rises beyond the limits which have been set, while at the same time the cash reserve, at the point where the exchange was purchased, falls, and to bring the situation back to normal, probably the branch at this point will sell exchange, thus getting in cash and cutting down its unwieldy balance abroad.

Canadian Rates for Sterling.

As regards sterling exchange, when a large sale is made, the repurchase of a like amount to cover the account, or "cover" as it is called, is effected in the New York exchange market, because one can go there practically any time and buy or sell any amount. But, to buy the "cover" in New York, it is necessary to have or to send the funds there. To send the funds there, it may be necessary to buy New York funds here at prevailing rates; and if the bank uses balances already lying in New York, it is giving up funds which are saleable here at current rates. So the formula is that a sale of £10,000 sterling here necessitates purchase of \$50,000 New York funds in Toronto or Montreal at market rates, followed by purchase of £10,000 sterling in New York at rates there prevailing. Therefore, in calculating the Canadian rates for sterling, the premium or discount on New York funds here is added to or deducted from the New York sterling rate. To test this statement one has only to refer to the exchange quotations as published daily by the newspapers. For example, on the day of writing these notes, the New York rate for demand sterling is given as 4.75%; the premium in Toronto on New York funds between banks, $\frac{1}{8}$ p. c.; and the Canadian rate for demand sterling, 4.80. Thus 15-1600 of 4.75375-1 equals .0446; 4.75375 plus .0446 equals 4.7983, which is practically equal to 4.80.

When a Canadian bank which carries the accounts of several important exporters of produce buys from them large bills on England, it may send the bills direct to its

British correspondents or send them to New York to be negotiated in the exchange market there. If the bills are sent to England it means a swollen balance in London, which is probably corrected through selling in New York the bank's own drafts on its London agents. Of course it may happen that another bank in Toronto or Montreal is very desirous of purchasing about this amount of sterling, and that the sale can be made to this bank on slightly better terms than could be made in New York. If, however, the transaction is put through the New York exchange market, the bank buying the bills in the first place will have New York funds to sell.

The Place of the Broker.

This is where the exchange brokers render service. Every morning the broker ascertains from each bank what amount of sterling and New York funds it requires to buy or sell to adjust its accounts with foreign correspondents to the proper basis. Then the broker brings buyers and sellers together and the prevailing exchange rate will depend on the preponderance of buying or selling orders and urgency of the demand. When, as has been the case since the end of January, the banks nearly all want to buy New York funds, then the premium tends to rise. If the Dominion legal tender notes were convertible on demand into gold, as before the war, the banks would simply turn in the notes to the Receiver-General, get gold and ship it to New York whenever the premium on New York funds rose above 3-32 p.c.—that being the cost of shipping gold. So the abnormal exchange rates are really due to the conservation of our gold resources as applied through suspension of specie payments on Dominion notes.

In the same way our quotations for francs, roubles, and other Allied exchange, are taken from New York. They are simply the New York quotations for these exchanges—modified or altered according to the premium or discount here on New York funds. If New York funds here were steady at par our quotations for pounds, francs, roubles, lire, would be practically the same as the New York quotations. The quotations established in New York are, of course, broadly regulated by demand and supply. It is well known that the abnormally large supply of bills drawn on Allied countries, arising out of the huge shipments of munitions, foodstuffs, etc., has forced their respective exchanges to a heavy discount as quoted in American funds. The quotation for the pound sterling—4.75%, etc., etc.—represents what a pound is worth in American dollars. Rouble quotations are on a similar basis—thus 28.90, as quoted in New York, means that the Russian rouble, the par value of which is 51.5 cents, is worth 28.90 cents. Francs and lire are quoted differently. In this case the quotation expresses the number or amount of francs or lire required to make \$1. Thus "francs, 5.84 $\frac{3}{4}$ " means that 5.84 $\frac{3}{4}$ francs are required to make \$1 in New York funds (5.18 $\frac{1}{2}$ is the par quotation), and "lire, 7.26" means that 7.26 lire are required to make \$1 (par being 5.18 $\frac{1}{2}$, the same as francs).

German exchange is quoted in New York according to the value there of 4 marks. The par value is 95 $\frac{1}{4}$ cents; but present quotations are around 67 $\frac{3}{4}$. The Austrian kronen, with par value of 20.3 cents, are quoted around 11.05.



PROGRESS OF WORK ON THE HALIFAX OCEAN TERMINALS

This view, taken from the Tram Company's plant, gives a good general idea of this important national work, as it appeared at the end of 1916

A GREAT NATIONAL WORK

An account of the progress being made on the construction of the new
Ocean Terminals at Halifax

WITHIN the past few months, progress on the construction of the new Halifax ocean terminals has reached the point where it is possible for ships to make use of the new facilities for loading and unloading cargoes. To those, who were familiar with the site of the docks before work was started, the transformation has been astonishing. There is still much to be done, but enough has been accomplished to give some idea of the magnitude of the project and to fill the layman's mind with wonder at the prowess of the engineers and laborers, who have been toiling at the gigantic task for the past four years.

In connection with the illustrations accompanying this article, some explanatory matter may be supplied. The project was launched as a national undertaking, with the avowed object of providing terminal facilities on the Atlantic seaboard, of a scope and capacity adapted to the very extensive railway developments that had been taking place of recent years. It was first proposed to extend the existing dock facilities at Halifax, but this plan was dropped as involving a too expensive dislocation of established business. There were also proposals for building new terminals across the harbor at Dartmouth. Finally, however, the scheme at present under way was evolved and we have the spectacle of an entirely new series of piers and basins being created along the shore to the south of the city.

Scope of the Undertaking.

The plan makes ultimate provision for 27 large vessels with deep water berths of 45 feet depths at low tide. Ample freight and passenger handling equipment will be installed, which will be linked up with a new rail connection, already completed, entering the terminals from the west. A railway station forms a unit in the plan.

The contract for the railway approach was let in 1913. The first unit track contract was let in January, 1914. The breakwater at the extreme south end of the "terminal site," shown quite distinctly in the first illustration, has been completed. Excellent progress has been made with the construction of the quay walls and with the dredging of the rock and other materials.

From a paper read by F. W. Cowie, B.A. Sc., chief engineer of the Montreal Harbor Commission, at the convention of the American Association of Port Authorities, the following descriptive matter is excerpted:

The General Scheme.

"The general scheme provided for an outer breakwater, a system of double-berth piers, and a large bulkhead landing quay. The whole scheme will accommodate 27 large-sized ocean steamships, most of the berths to have a depth of 45 ft. at low tide. The landing quay and the railway terminal and station have been designed to provide a concentrated unit for quick despatch. A system of piers and wharves, with railway approach was designed, so that excavation and filling would result in an even balance, including railway cutting and large classification yards.

"The piers have been designed tapering towards their outer ends. The reason for this is to reduce the amount of dredging and walls at the heads of the basins, the amount of walls and filling at the pier heads, and to give the greatest widths of approach from both sea and land, where most required, namely, at the outer ends of the basins and inner ends of the piers respectively.

"It was decided that the use of timber in modern construction work was not permissible, in view of the uncertainty and power to resist indefinitely decay and attack from

sea worms and insects, danger from fire, liability to damage, and high cost of maintenance, as well as having regard to the best modern practice.

"Concrete in its various applications was next studied. Unlike timber, concrete is not subjected to attacks of the teredo and limnoria and their allies. There are no instances on record of damage done to concrete structures by sea worms. After an exhaustive study of the chemical action of sea water upon concrete it was decided that concrete, if properly constructed, is perfectly safe in these waters, when not exposed to the combined action of sea water and frost within range of or above tidal levels. The whole scheme was, therefore, designed so that all concrete would be moulded in air and fully matured before being exposed to salt water below tide level. Above tide level all concrete work will be protected by a granite wall.

"The quay wall designs for large, modern steamships requiring a vertical wall of some 60 feet in height, capable of carrying a permanent structure with heavy loads and built on rock foundations, called for very careful consideration. A new departure in design was proposed by the writer and very carefully worked out by Mr. James McGregor, superintending engineer, and his staff. Before adopting his design careful consideration was given to the following types: (a) Concrete block work, with mass concrete heart, estimated cost \$550 per lineal foot; (b) reinforced concrete caisson floating to position, \$540 per lineal foot; (c) solid block wall, \$550 per lineal foot; (d) reinforced concrete decking on cylinder pier, \$490 per lineal foot; (e) adopted, \$490 per lineal foot.

"This design was finally evolved and adopted, by which it is hoped to combine the undoubted advantages of reinforced concrete with those of cheaper mass work and eliminate to a great extent the objectionable features of each, and at the same time produce a wall of the gravity type which will be economical and speedy of construction. The wall is designed to be sufficiently wide at high water level to carry the tracks for the block-setting Titan, or travelling crane, and later to support the front rows of the transit shed pedestals and columns. In this design of wall the method is to construct stacks of cellular reinforced concrete shells or hollow blocks, one perfectly above the other, and securely bonded and bedded by means of mass concrete and grout deposited in the front and middle compartments and in the grout holes. The other compartments are to be filled with rock or other provided filling in order to give the wall sufficient weight. All the bottom shells and half of the height of the next shells above are to be completely filled with concrete to form a solid, full-width foundation and ballast

floor. Each stack of shells or section of the wall is to be 22 feet long, and is to be keyed to the adjoining sections by means of vertical guide posts. The object of these posts, which are constructed of reinforced concrete, and of varying sizes so as to maintain a true distance to centres of stacks, is to prevent all lateral movements in the event of settling taking place, to facilitate the setting of the shells under water, and to prevent the escape of the filling in and behind the walls.

"The spaces between the stacks of shells are to be filled with rubble or other filling, thus forming an expansion joint and a means whereby each stack of shells can settle independently without affecting the adjoining portions of the wall. This type of wall lends itself to speedy and economical construction.

"The reinforced concrete shells, whose outer faces come in contact with the sea water, are to be built up to one foot below extreme low water level, and the portion of the quay

above this level is to be constructed with smaller blocks up to high water level with cut granite masonry and finished with a cut granite coping three feet wide. The reinforced concrete and mass concrete, therefore, will not be exposed to the action of frost between high water and low water.

"Mooring hooks or bollards, each designed to fit into and to correspond with the granite coping, and to safely withstand a pull of 75 tons, are to be placed along the face of quays at intervals of 88 feet. In places where it is found

necessary this spacing is to be reduced to 66 feet. In order to balance the pull on the mooring hooks the walls at these points are to be anchored back to concrete blocks by means of $2\frac{3}{4}$ inches diameter steel anchor ties. Granite boat stairs and landings are to be provided at the pier heads, the heads of basins, and at the ends of the passenger landing quay. Iron ladders are also to be placed in suitable recesses at frequent intervals along the faces of the walls. The contract cost of the adopted design, including mooring hooks, ladders, stairs, fenders, etc., and excluding only dredging and filling, will be, say, \$490 per lineal foot.

"The cellular reinforced concrete blocks, which are made in a well laid-out and equipped block yard, are being made at the rate of from 10 to 13 per day, containing from 300 to 350 cubic yards of concrete and from 30 to 39 tons of reinforcing steel. Each block contains about 30 cubic yards of concrete and weighs about 63 tons, the side and partition walls being 8 inches thick.

"The blocks are lifted from their moulding platforms after maturing 28 days, and placed on flat cars by a 150-ton standard gauge railway wrecking crane, enough blocks (13) being loaded on cars at a time to complete one section of



The first steamer to land goods at the New Terminals

quay wall 22 feet long. The crane then travels out to the end of the wall, and the blocks on the cars are run out to it. They are then lifted and lowered into place, being guided into position by the reinforced concrete guide and key posts used between adjoining stacks of blocks. The single crane in operation sets

usually one stack of blocks, or 22 lineal feet of wall, a day, but 66 lineal feet of wall have been built in two days under favorable conditions.

"The principle of using as large blocks as possible for quay wall construction, provided that the weight is kept within reasonable limits for economical and, if possible, standard lifting equipment, has been fully justified, as it would be impossible to place small blocks into the wall at a faster rate and with greater accuracy. The cellular construction of the blocks has, in addition to admitting the construction of a very large block for less than one-third the weight of any equal over-all dimensioned solid block, effected an enormous saving of both time and money in foundation work.

"Instead of having to level off and screen the whole of the foundation for the bottom block, concrete stools about 6 feet square are built at the corners of the junction of each stack of shells. These stools support the stack of blocks, while the remainder of the bottom is left rough and serrated, the mud and debris only being removed by dredges and water jet or by hand in a diving bell or by helmet divers. By this means 22 lineal feet of foundations can be prepared in the diving bell per day, and on a mass concrete foundation two helmet divers have prepared 44 lineal feet of foundation per day.

"No doubt if rock foundations were prepared very carefully by the dredges, helmet divers could be used to the same



The Quay Wall of No. 1 Basin

advantage on rock as on concrete. It is questionable whether any records can be found where the foundations and superstructure of quay walls built in tidal waters have been constructed with the speed and facility made possible and attained at Halifax by reason of the special design and type

of the blocks. An important erection feature which materially assists the progress of the work is that the block-setting crane is run out over the blocks before the concrete and earth filling is put in them, and while the whole of each stack is simply supported on the 6-foot square pedestal or stools at each corner.

"The granite face-work, which is obtained from a government-owned quarry within three miles of the work, will prevent any abrasion of the face and any frost action between tides.

"It may be safely recorded that, as far as the work at present shows, all the features of the design are justified, and actual work has shown that the style of construction is better suited to the site of the terminals and conditions at Halifax than was ever anticipated.

"The contractors for the railway and later contractors for the docks were fortunately reliable firms, having ample capital and experience. The contractors for the docks recognized the unique features and problems from the start. They carefully laid out their work and provided construction plant which is attracting the attention of port builders the world over. Not one essential modification has been required in the designs or specifications, and the work is now sufficiently advanced so that three berths for the largest type of modern ocean steamship will be available in November, 1916, with railway terminals second to none on the continent."



One of the immense freight sheds at the new Docks

PRAIRIE PROVINCES BRANCH

Activities during the Month of February—Conference with Cartage Companies—Opposition to Firemen's Union in Winnipeg—Workmen's Compensation Legislation

By G. E. CARPENTER

Assistant Secretary, Winnipeg

DURING the session of the Law Amendments Committee of the Manitoba Legislature the Legislation Committee of the Branch had occasion to appear several times in connection with what is commonly known as the "Electricians' Bill," which provided that any element of electrical service must in future be installed, repaired or maintained by an electrical contractor or journeyman who had passed an examination and received a certificate from the Board. As a result of the protest made by the Committee the Law Amendments Committee has accepted an amendment of the bill under which repairs can be made by an engineer on the premises, and further, that a certificate shall be granted to employees of manufacturers making repairs to electrical machinery and apparatus without passing a journeyman's examination.

Proposed Classification No. 17.

The railway companies have stated that it is absolutely impossible for them to file a statement showing with any degree of accuracy the result changes in the proposed classification would make in changes on traffic in Eastern and Western Canada respectively, as directed by the Railway Commission's General Order No. 179. After careful consideration the Board has decided to waive this portion of the order and has extended the time for filing and serving objections to the proposed rules contained in the proposed classification, until March 31st next, after which date the matter will be set down for hearing at Toronto, Montreal, Winnipeg, Regina, Edmonton, Calgary and Vancouver. In order that the opinion of western shippers regarding the proposed rules may be had, and some united action taken in respect thereto, the Regina Board of Trade has called a meeting of Western Boards of Trade to be held in that city on March 14th. An invitation has been extended to this Branch to send delegates and this will be done. Mr. J. E. Walsh, Manager of the Transportation Department of the Association at Toronto, is coming West for this purpose.

Election Law in Manitoba.

An amendment to the Election Law of Manitoba introduced at the present Session of the Legislature provided for a half holiday on election day. This amendment was opposed very strongly by the Legislative Committee, and several members of the Branch who appeared in person before the Law Amendments Committee urged that no legislation should be enacted which would curtail working hours. The large number of public holidays was explained to the committee, and it was held that particularly at this time, when the Government of Canada is urging production and more production, it would be unwise to increase the number of holidays. The statement was generally made that employees were given every opportunity to vote and those entitled thereto did, but in many cases the percentage of employees entitled to vote was small, one-fifth being the general estimate and it would be a gross injustice to the balance to enforce a half-holiday and thus reduce their earning capacity. The injustice to a factory operating under a large overhead expense by creating an additional holiday and thus lessening its working hours was also dwelt upon at length. At the present writing the bill has not been reported by the committee.

Oleomargarine.

Reconsideration of the resolution upon this subject embodied in last month's circular letter having been requested by some members of the Branch, it was decided at a meeting of the Executive Committee held on February 22nd, that the resolution should be laid over for further consideration at the next meeting of the Executive and that no action would be taken upon the subject in the meantime.

Amendment to the City of Winnipeg Charter.

An amendment to the City Charter, asked for by the City Council, providing for the reduction of qualification for Aldermen from \$500.00 freehold to \$100.00 freehold, or \$200.00 property leasehold, and another giving power to the City Council to go into merchandising and manufacturing of any necessity of life involving the expenditure of any amount of money without the approval of the ratepayers, were opposed by the Legislation Committee of the Branch. These amendments met with such wide opposition that the City Council stated to the Committee that it was willing that contentious clauses of the proposed amendment should stand over until the revision of the City Charter takes place. The Attorney-General stated that when the new charter was prepared for submission to the present Session it would be introduced and held over for a year in order to give all interested therein an opportunity for study and preparation of their views thereon.

Cartage Rates—Winnipeg.

At the request of the cartage companies handling shipments to and from the railway freight sheds in Winnipeg, a joint meeting of the Transportation Committee of the Branch and the Executive Committee of the Shippers Section of the Winnipeg Board of Trade was held February 27th, when the representatives of the cartage companies explained that, with the greatly increased price of supplies, they found they could no longer perform the service required of them by shippers and consignees at the present rates and make a fair return upon capital invested in their business. They stated that they desired an increase of 1c. per 100 pounds on L.C.L. shipments, all other charges to remain the same as at present. After full consideration the meeting, which was largely attended, unanimously passed the following resolution:—

That the proposed advance in cartage rate on less than carload shipments within the first zone from 3c. to 4c. per 100 pounds be accepted upon the understanding that the cartage companies agree to consider a revision of these charges upon a return to normal conditions but not later than six months after the close of the war.

Canned Salmon Rates.

When the tariffs naming increased rates on canned salmon from British Columbia coast points to distributing centres in Western Canada came up before the Railway Commission at Ottawa on February 20th, the traffic officer, Mr. J. E. Walsh, appeared on behalf of the members affected and lodged protest. However, as the Commission had received only one complaint from a Western Board of Trade, viz., Regina, and the representatives of the railways stated no business was

moving, tariff naming rates of 80c. minimum 70,000 lbs., 82½c. minimum 60,000 lbs. and 95c. minimum 40,000 lbs. were allowed to become effective March 1st, and the Commission will give all parties opposed thereto an opportunity of placing their objections before the Commission upon its next visit to western cities.

Workmen's Compensation—Saskatchewan.

The Attorney-General introduced a Workmen's Compensation Bill at the present Session of the Saskatchewan Legislature which was in many respects identical with the Manitoba Act. However, owing to the great diversity of views expressed by the parties affected thereby, the bill was allowed to remain over until the next session, thus giving all concerned an opportunity of study and consideration of the best manner in which to deal with this matter. Inquiries upon this subject from members in Saskatchewan will be welcomed.

Workmen's Compensation—Manitoba.

When an amendment of this Act, covering some minor changes came before the Law Amendments Committee of the Manitoba Legislature, representatives of the Trades and Labor Council asked for two additional commissioners, making three in all, to administer the Workmen's Compensation Act, and also an extension of the act to cover workmen practically from the time they leave their homes for work until they return thereto. These amendments were opposed by the Branch, and up to the present they have not been adopted, nor has any definite action been taken upon the objection made by the Branch to the inclusion of the office staff and officers of a company, subject to the risk of the industry, in the payroll upon which the premium has to be paid, or the placing of some industries under the act while their competitors (wholesale dealers) are exempt.

Civic Firemen's Union.

A number of the employees of the Fire Department have requested the City of Winnipeg to recognize a union which has been formed under the auspices of the Trades and Labor Council of Canada. The older men of the Department, who are in the minority, have memorialized the city to disregard the union. The matter was referred by the Council to the Fire, Water and Light Committee, who referred it back to the Council without recommendation, and the latter to-day sent it back again to the Committee. The position taken by this Branch is outlined in the following letter to City Clerk Brown:—

"The members of this Branch in Winnipeg view with alarm the efforts that is being made to secure from the Council of the City of Winnipeg recognition of a Union among Civic Employees, viz., the employees of the Fire Department. It is submitted that any division of authority or influence over the members of the Fire Department, as between the chief thereof and any other person or persons, would so interfere with the necessary discipline of the Department as to seriously impair its effectiveness, and thus prove disastrous to the protection of property throughout the entire city.

"Furthermore, it must be borne in mind that while of secondary importance, any action which may have the above effect will of necessity result in higher insurance premium rates. With the already acknowledged high cost of conducting business in the City of Winnipeg to-day, this added burden would prove very onerous, if not disastrous, to industry.

"Therefore, the Prairie Provinces Branch of the Canadian Manufacturers Association would respectfully urge the Council of the City of Winnipeg to refuse recognition of any union among the members of the Fire Department."

It is expected that the matter will be disposed of at the next meeting of the Council.

NEW INDUSTRY FOR HAMILTON.

Company Incorporated to Make Steel Castings by an Electrical Process.

The Carbon and Alloy Steels Company, Limited, has obtained a Dominion charter, with an authorized capital of \$1,500,000. This company will erect furnaces and a foundry plant in Hamilton for the manufacture of steel castings, ingots, etc., by the Moffat electric process. The company will also take over the Moffat-Irving Steel Works, of Toronto, which will be moved to Hamilton and added to the new plant.

Plans have been prepared by Prack and Perrine for buildings that will run into about \$100,000, the main building being 60 feet wide and 400 feet long, and subsidiary buildings will cover an equal area. Another \$200,000 will be spent in furnaces, electrical equipment, conveyers, compressors and other machinery. This plant, when fully equipped, will give employment to about 250 men, and will have a gross capacity of 32 tons of molten steel per 24 hours.

The incorporators of the Carbon and Alloy Steels Company are: J. B. O'Brien, K.C., president Moffat-Irving Steel Works, Ltd., Toronto; H. J. Waddie, Esq., president The Canadian Drawn Steel Co., Ltd., Hamilton; J. W. Moffat, Esq., vice-president Moffat-Irving Steel Works, Ltd., Toronto; John G. Gauld, K.C., Gauld, Lang & Crosthwaite, Hamilton; W. E. Vallance, Esq., late of Wood, Vallance & Co., Hamilton.

IMPORTS OF WOOL.

The Minister of Trade and Commerce has been informed by the Secretary of State for the Colonies that the Governments of Australia and New Zealand have been asked to facilitate shipment of wool bought before the embargo was placed on this commodity. As regards further purchases of wool, the Imperial Government is prepared to guarantee exportation from Australia and New Zealand of 7,500 bales New Zealand crossbred and 16,300 bales Australian wool. For the present no objection to wool being bought f.o.b. Australasia and shipped direct to Canada will be made, but later it may be desirable that part should be shipped via the United Kingdom.

A BOOK ABOUT A STOKER.

A handsome 36-page booklet describing, with numerous illustrations, the mechanism and operation of the Galt Sprinkler Stoker, has been issued by the manufacturers, the Galt Foundry Company. The points in favor of this stoker are set forth quite plainly. One advantage is shown to be the possibility of using low-priced fuels with the greatest economy and without smoke; another, the easy installation of the stoker without the necessity of rebuilding the boiler-house.

The Galt Sprinkler Stoker has the further advantage of being quite simple in design, so that in case of interruption or discontinuance of its service it can be easily and economically restored to use. Each stoker is equipped with a regular fire door of ample proportions, so that firing by hand can be resorted to when desired.

In addition to the description of the stoker, the booklet contains much useful engineering data, such as comparative evaporative data, keeping account of steam boiler economy, analysis of coal, heat value of coal, boiler testing and how to read a slide rule. All of which will be found of value by engineers.



THE ONTARIO INSURANCE INVESTIGATION

Views of the Manufacturers presented clearly and emphatically to the Commission
Evidence submitted by several prominent members of the Association

By W. H. SLATER

THE Commission of investigation into insurance conditions in Ontario, presided over by the Hon. Justice C. A. Masten, resumed its sittings during the week beginning January 29th. It will be remembered that the Canadian Fire Underwriters' Association were faced, at the beginning of the inquiry, with somewhat serious charges of discrimination and arbitrary methods in the making of rates and their control over fire insurance conditions in the Province. With a view, probably, to drawing the attention of the Commission from these charges, the Underwriters' Association complained that they had to contend against unfair competition, and requested that a tax of from five to ten per cent. be imposed on all insurance purchased from companies not registered in Ontario. The Canadian Manufacturers' Association felt that the interests of its members demanded that the competition of unlicensed companies—practically the only restraining influence against high rates, should in no way be restricted, but should be encouraged rather than prohibited. The Insurance Committee of the C.M.A., appointed Mr. F. W. Wegenast to represent the Association's interests before the Commission. Mr. Wegenast submitted the following statement to the Commissioner:

The Association's Position.

"The Canadian Manufacturers' Association make the following submissions and is prepared to adduce evidence and representations in support of them.

"The control exercised by the Canadian Fire Underwriters' Association over insurance rates and terms has approached the nature and proportions of a monopoly.

"The control has manifested itself in arbitrary ratings and rulings which are frequently discriminatory and otherwise prejudicial to manufacturers and other property-owners.

"The practice of the Canadian Fire Underwriters' Association is not sufficiently sensitive to merit, and does not afford a proper incentive for fire protection work.

"The proposal of a tax on premiums paid to unlicensed against exorbitant and arbitrary rating is the competition of unlicensed companies, and to interfere with such competition would be to deprive the insurer of his protection.

"The proposal of a tax on premises paid to unlicensed companies on contracts entered into outside the Province should not be entertained. Such a tax, if practicable and if within the powers of the Provincial Legislature, would seriously impede the competition of such institutions as the New England Mutuals and Lloyd's.

"In order to promote competition the present tax paid by brokers on premiums for unlicensed insurance and the tax on fire losses, which is illogical and ill-advised, should be abolished, particularly in view of the fact that no such taxes are levied on the re-insurance placed by licensed companies.

"The control of the Canadian Fire Underwriters' Association over Goad's Plans is inimical to the public interest and should be prevented either under the copyright law or under the law respecting combines.

"Government control of rates would be very difficult to apply and would not afford an adequate substitute for competition."

Witnesses are Heard.

A large number of members of the Canadian Manufacturers' Association were present at the Ontario Parliament Buildings to support Mr. Wegenast in the presentation of his

case. Mr. S. R. Parsons, General Manager of the British American Oil Co., Ltd., and Vice-President of the Association, was the first witness called. Mr. Parsons stated that, although he had for twenty years been a director of one of the Canadian tariff companies, he was convinced that unlicensed competition was necessary to the interests of the assured and that any restriction of such competition would involve hardships. He cited the case of the British American Oil Company, who are actually unable to obtain their insurance in licensed companies. The imposition of a tax would involve discrimination.

Mr. P. Davies, of the Canada Glue Company, Limited, of Brantford, recited an interesting case of how the rates of the Fire Underwriters' Association are affected by active competition. Towards the end of the year 1914 the Canada Glue Company erected a new plant and equipped it with automatic sprinklers. On application, the C.F.U.A., inspected the building and quoted a rate of 40c. per \$100. The assured considered that this rate was exorbitant and opened negotiations with a group of unlicensed mutual companies. The mutual companies were able to satisfy them that insurance under their system would cost a great deal less than the rate quoted by the tariff companies. Almost immediately after negotiations with the mutual companies had been concluded, Mr. Davies received a telegram from Mr. Goodell, the rating official of the C.F.U.A., sprinklered department, that the association would agree to accept the insurance at a rate of 15c. per \$100.

Inadequacy of the Service.

Mr. W. B. Tindall, of the Consumers Box & Lumber Co., Limited, testified as to the inadequacy of the service given by the C.F.U.A. Mr. Tindall mentioned several cases of rates having been arbitrarily increased without notice or explanation, and stated that he had never received a single suggestion from the C.F.U.A., as to how he could improve his plants so as to affect his insurance rates.

The Massey-Harris Co., Ltd.; The Gutta Percha & Rubber, Ltd.; The McKinnon Dash Company; The Toronto Carpet Company; Williams, Greene & Rome Company, Ltd., and many other firms insured in the mutual companies of New England, gave evidence as to the great value of the inspection service rendered by these companies and protested against the restriction of such competition by the imposition of a tax which would have to be paid by the assured.

Mr. H. J. Bird, manager of the Bird Woollen Mill Co., Ltd., of Bracebridge, gave examples of how the rating officials of the Canadian Fire Underwriters' Association had made very serious errors in the rating of his premises. But for the effect of unlicensed competition he would have had to pay more than double the rate he now pays. As a member of the Municipal Water Commission of Bracebridge, Mr. Bird had some experience of the methods of the C.F.U.A. Before spending large sums of money on improved fire protection, the municipality required to know what effect such improvements would have on the key rate of the town. It was very

difficult to obtain such information from the Underwriters' Association, who apparently expected the improvements to be made without any definite guarantees on their part.

Insurance on Elevators.

Mr. C. B. Piper, representing an association of terminal elevator companies of Fort William and Port Arthur, stated that the companies for whom he was authorized to speak, carried insurance to the extent of eighty million dollars. A part of this insurance, including insurance against collapse, was unobtainable in companies licensed in Ontario. The elevator companies are compelled by law to carry sufficient insurance to cover the grain stored with them. The nature of their business causes very considerable fluctuations in values from day to day. The only adequate method of placing insurance to provide against these fluctuations is by means of an adjustable floater policy. A few years ago, no Canadian company would issue such a policy and the elevator companies were compelled to have recourse to unlicensed insurance. Mr. Piper stated that his insurance was now handled by a firm of New York brokers, who gave him more satisfactory service than he had ever been able to obtain from the companies or the Canadian Fire Underwriters' Association. His companies should not be restricted from taking advantage of such service. The insurance agents of Fort William had sent a deputation to the Commission asking that legislation should make it compulsory for all Ontario business to be handled by Ontario agents. This would be a big mistake. Some of the companies had tried local agents, but had to transfer their insurance because they did not get the service. The local agents merely interested themselves in obtaining their commissions and, once the business was on their books, they did nothing at all to protect their clients.

Referring to the effect of insurance cost on his business, Mr. Piper said that the smallest fraction of a cent per bushel exercised a great influence on the competition between Canadian and United States elevator companies. The insurance premiums paid on grain were calculated on a short period basis, which had the effect of increasing the rate by about 20 per cent. each time it was applied. Grain companies in the United States were going to bid very strongly for the business and the Canadian companies would lose the trade unless they watched the charges very closely. Mr. Piper had been specially requested by the Eastern Terminal Elevator Company to say that they found it absolutely impossible to obtain sufficient insurance, either in Canada or outside, to cover the grain in their elevator. They were compelled to place a large part of their insurance in unlicensed companies.

Effect of Competition on Rates.

Mr. S. A. Griggs, of the Walkerville Brewing Company, Limited, gave very pointed evidence on the effect of competition on the rates made by the C. F. U. A. About ten years ago the tariff companies increased their rates to over two per cent. After endeavoring vainly to obtain an adequate reduction, he placed his insurance in the hands of the Insurance Department of the Canadian Manufacturers' Association, who were successful in placing the business at very considerably less than one-half the rate demanded by the Underwriters' Association. Shortly after he had transferred his insurance, the C. F. U. A. made another inspection of his plant and offered him a rate of 90c.

The investigation was adjourned on the 2nd of February and resumed on the 12th.

Mr. Wegenast, in examining a number of Toronto brokers, elicited interesting information as to the methods of rating carried on by the Canadian Fire Underwriters' Association. The rating schedules were stated to admit of unjust dis-

crimination, while too much was left to the discretion of the individual rating officials. There is no schedule for the rating of sprinklered risks, and the rates on such risks are largely governed by the amount of competition. Many other important manufacturing industries, as well as boiler houses and dry kilns, are also unprovided for in the schedules, resulting in arbitrary rates which may in some instances be unfair. The brokers admitted that, when applying to the C. F. U. A., for a rate on any particular risk, they would consider it helpful in reducing the rate if they could mention that the insurance might be given to unlicensed companies. If two rating officials, working independently, rated any ordinary manufacturing risk, it was considered improbable that they would both arrive at the same rate, proving that the schedules are very far from being scientific.

U.S. Reciprocal Associations.

The morning of the 13th was devoted by Mr. Wegenast to the interests of manufacturers insuring in United States reciprocal associations. Counsel explained in detail the method of operation of these Reciprocal Underwriters, proving that members of such associations neither purchased insurance (so far as concerned these particular contracts) nor engaged in the business of insurance. They merely entered into a contract of mutual self-protection with other manufacturers and merchants transacting a similar class of business.

Mr. J. S. Gillies, of Gillies Bros., Ltd., Braeside; Mr. Ivey, of the John D. Ivey Co., Ltd.; representatives of Mr. J. R. Booth and W. C. Edwards & Co., Ltd., of Ottawa, and other corporations gave evidence as to the great advantages they had derived, both as to rates and inspections from the operations of the Reciprocal Underwriters. They did not consider that they were purchasing insurance any more than would a firm with a large number of branches which carried its own insurance, setting aside a certain sum each year as a reserve against fire losses. They considered that any legislation compelling them to pay taxes on the protection of their property would be unjust.

An Historical Survey.

During the afternoon of the 14th, Mr. G. F. Benson, of the Canada Starch Company, Limited, of Cardinal, Brantford, and Fort William, gave the history of his negotiations with the Canadian Fire Underwriters' Association during the past fifteen years. In the year 1902 the Underwriters made specific rates on the various buildings of his plant at Cardinal, some of which were sprinklered and some unsprinklered. No details were furnished, as at that time there were no detailed rating schedules. The average rate arrived at over the whole plant was 1.90%. Between 1902 and 1916, the Canada Starch Company spent about \$15,000 in improved fire protection for which they had been unable to obtain any recognition from the C. F. U. A. In 1913, after vainly endeavoring to obtain a reduction in rate on account of the improvements, the insurance was taken away from the tariff companies and placed entirely in non-tariff companies, largely unlicensed. The following year, in view of the competition, the C. F. U. A., reduced their average rate to 1.65%, but only on account of a redistribution of values and still in no way recognizing the improved condition of the plant. Mr. Benson persisted in his efforts to obtain a more equitable rate, and towards the end of 1916, succeeded in obtaining details of the rating of a few only of the various buildings. The committee of the C. F. U. A., governing rates on sprinklered buildings, refused point blank to show how their rates were arrived at. They suggested certain improvements to the sprinkler equipment, but declined to state what reduction in rate would be

granted if they were carried out. In 1914 the assured erected a fireproof warehouse and the C. F. U. A. quoted a rate, without details, of 20c. on the buildings and 35c. on the contents. In 1916, when details of some of the rates were given, the rate on the warehouse was increased—still without details—to 50c. on the building and 75c. on the contents. When the discrepancy with the former rate was pointed out to them, they reluctantly returned to the previous rating.

Rates are Raised.

Mr. A. M. Kerr, of Doon Twines, Limited, stated that the C. F. U. A. published in October, 1913, a certain rate on his plant at Doon. The occupancy charge—the principal basis of the rate—made at that time, was 50c. In October, 1916, the plant was re-rated owing to some changes having been made. The changes consisted only in a reduction in the amount of manufacturing carried on and the plant was in a better condition at the present time than when it was first rated. In 1916, however, the occupancy charge was increased from 50c. to 1.25% and the final rate practically doubled. The C. F. U. A. were fully cognizant of the class of manu-

facture carried on in 1915, and there was no adequate reason for the occupancy charge being increased. They admitted that the plant had been originally rated without the formality of an inspection.

A great deal of further evidence was given by other important manufacturing concerns, all tending to prove that the Canadian Fire Underwriters' Association had not shown itself to be a fit body to be placed in charge of what would become a monopoly, if the competition of unlicensed companies were restricted. The Commissioner said that he fully realized the extreme importance of unrestricted competition and, in his present state of mind, felt convinced that no legislation should be enacted which would prevent Ontario property-owners from placing their insurance in the most favorable market. The investigation was again adjourned, no date being fixed for the next session.

It is interesting to note that, since the Commission commenced, the Canadian Fire Underwriters' Association have cancelled the contract by which Goad's plans were supplied only to its members. It is understood that the Association is making arrangements to make its own plans.

TRANSPORTATION

By J. E. WALSH

COAL SHIPMENTS.

Delays for Custom Clearance at the Border to be Avoided by Shipment in Bond.

A general order has been made by the Board of Railway Commissioners for Canada, reading as follows:—

"Upon its being represented to the Board that the movement of bituminous coal from points in the United States to points in Canada is delayed at the frontier for custom clearance, and that such delay can be obviated by said coal being entered for duty at interior ports of entry or outports; and upon reading what has been filed by the Commissioner of Customs stating that no objection exists to such obviation although the coal may be billed for customs clearance at the frontier,

"It is ordered that railway companies within the legislative authority of the Parliament of Canada be, and they are hereby, permitted to forward bituminous coal from the United States, billed for clearance of customs at the frontier, to its destination in Canada if the destination be a customs port or outport, and if not, then to the customs port or outport nearest to but short of its destination, for customs clearance thereat, instead of at the frontier; the carriage from the frontier to the interior point of clearance to be in bond under customs manifest prepared by the railway company and signed by a customs officer."

IMPROPER LOADING.

Attention of Shippers and Agents is Directed to Rules Governing Loading of Cars.

Following is a copy of a letter received by A. Price, assistant general manager, Canadian Pacific Railway, from R. A. Pyne, superintendent M. P. & Car Departments, which is of general interest to shippers. Its contents should be carefully noted.

"We are having some complaints at interchange points about cars being improperly loaded. This especially refers to box cars. The load moving against the side door en route and bulging it out. Agents and shippers are apparently not conversant with the loading rules:—

"Rule 124 reads, in part, as follows:—

"Lading of a character requiring protection to prevent it falling or rolling out at doorway or coming in contact with door while in transit must have the prescribed stripping across the door opening.

"Door strips must be nailed to the inside of the door posts (never on the outside) and must not be less than one (1) inch thick by five (5) inches wide, straight-grained sound lumber or their equivalent; or slab wood not less than one and one-half (1½) inches thick at centre; placed sufficiently close to floor of car and to each other to prevent the lading from falling or rolling out of car or coming in contact with the door.

"When necessary to nail cleats or braces to lining of box cars having steel superstructure without exterior siding, the nails must not be driven entirely through the lining.

"The N. Y. C. recently had their Pass. train No. 46 raked on account of a loose door on St. L. & S. F. 41549, which was received by us at Sherbrooke from the Q. C. loaded with papers which had shifted against the side door and bulged it out.

"Would you kindly take the necessary action to have this information put in the hands of shippers and agents. It will save us considerable expense if such cars are loaded properly."

RELIEVING EASTERN CONGESTION.

How the American Railroads have been Handling the Situation During the Past Month.

The Traffic Service News Bureau, Washington, D.C., reports as follows on the freight congestion situation:—

"The railroads took action February 15th to relieve the traffic congestion at eastern ports and the shortage of freight

cars aggravated, though not caused chiefly, by the interference of Germany's submarine campaign with transatlantic shipping. Representatives of thirty roads, at a meeting here attended by Interstate Commerce Commission officials, reached a 'gentlemen's agreement' for a new and drastic campaign of relief, including the following measures: Adoption of regulations tantamount to a virtual embargo on all export shipments through eastern ports until a part of the vast accumulation already awaiting steamships can be cleared away; liberal use of 'an intelligent embargo' on all domestic eastbound shipments; a policy of separating empty from loaded cars in the congested yards and sending the empties back, with others released by unloading, to western lines in solid trainloads, ahead of all other traffic except passenger trains. Eastern roads agreed to give, in addition, an empty car to their western connections for every loaded car received.

"Export traffic through the East will remain virtually at a standstill during the period of adjustment and eastbound domestic traffic will be greatly curtailed, if the plans work out.

"The amount of freight for export has increased greatly at eastern ports because of the great decrease in steamship sailings since the severance of diplomatic relations with Germany.

"At the meeting it was decided to move two trainloads of fifty cars each East from Minneapolis daily, one laden with wheat for New England, the other carrying flour to New England and the three cities named.

"Representatives of Minneapolis milling interests voiced a protest at the long delay in moving export wheat eastward, but when informed of the efforts contemplated by the roads to prevent an actual shortage of foodstuffs in eastern cities they withdrew their objections and promised to co-operate in meeting domestic needs.

"The two daily trainloads of wheat and flour are to have the right of way over all other traffic, except passenger business. Railroad officials believe the plan will succeed in averting any foodstuffs shortage in eastern cities.

"The embargo applying against eastbound shipments, it was said, will not apply to foodstuffs for domestic use, which will be expedited as much as possible.

"The roads also will move coal promptly to eastern cities and to any points where a shortage threatens, directing their first energies to keeping the lines open for coal and food.

"As fast as sailing ocean steamers diminish the accumulation of freight awaiting export at eastern points the railroads will let down the bars of the embargo, permitting the shipment, ton for ton, of supplies to replace those taken away. In this manner, it is hoped, the old accumulation can be disposed of and fresh shipments will await their turn."

OCEAN TRANSPORTATION.

How the Cost has Risen until Some Freights are To-day Higher than Rail Rates.

Mile for mile, ocean transportation is now probably more expensive than by land. More than a month ago, long before the new brand of submarine war made it advisable for neutral owners to keep their ships in ports, the quotation on fresh meat from New York to Liverpool was \$1.50 per 100 pounds, or about three times the rate from Chicago to New York. But when a railroad accepts a load of fresh meat, it also becomes the insurer thereof. Not so the son of Neptune. He takes the goods, gives a receipt, and only in the rarest of instances pays any loss or damage claims. The shipper takes out his insurance policy with Lloyd's and adds that to the cost of transportation. Liverpool is a little more than three times as far from New York as New York is from

Chicago. If the insurance and other costs incident to ocean transportation be added to the rate of \$1.50 quoted more than a month ago, it will probably be found that at that time, mile for mile, the water rate was just as high as that for carriage over land. Ocean transportation has never been as cheap as that on the Great Lakes, but the ocean mileage pro rata has been close to three for one. That is to say, for rate-making purposes, Liverpool has been about as far from New York as Chicago is from the largest port. But for the war, the fresh meat rate from New York to Liverpool should have been just about or a little less than the rate from Chicago to New York. If the warring nations do not soon return to ways of peace, the chances are that a lot of innocent bystanders will go much hungrier than they have been under present conditions. Americans who have had to live on immovable salaries, have been war sufferers for a long time. They would probably have suffered some even if there had been no war, owing to the fact that crops throughout the world were largely a failure. Russia is supposed to have immense stores of grain, but if she has, the allies are not able to avail themselves of it, although the Archangel route has been open, with but few interruptions, since the war began.

STORAGE BUILDINGS IN HALIFAX.

Premises of Defunct Car Works Would Afford Serviceable Accommodation for Exporters.

The premises of the defunct Nova Scotia Car Company, Limited, at Halifax, are for sale. They embrace large buildings admirably adapted to assembling and storage purposes, are situated on the railway, and within a very short distance of the docks.

Exporters of agricultural machinery, vehicles, automobiles, etc., etc., who are looking forward to the enormous after-war demands in Europe, would doubtless find many advantages in large warehouses on the seaboard, especially for the winter trade, when our railways are liable, as at the present time, to give a very unsatisfactory and precarious service.

A B.C. DEVELOPMENT.

How the Mineral-Bearing Areas of the North Thompson Valley Are Being Opened Up.

The following interesting letter has been received by the Canadian Northern Railway Company, Toronto, from Chu Chua, British Columbia, regarding the development of the mineral-bearing areas tributary to its main line through the North Thompson Valley:

"There are about twenty claims staked near here; the first car of gold ore taken from the surface of the Wind Pass claim had a gross value of \$1,648 and there is another car load ready for shipment.

"As soon as the spring opens up so that we can build wagon roads there will be large shipments during the coming summer. At present the ore is being taken down the mountain side by hand sleds. There is about \$50,000 worth of ore in sight on these claims without very much development work.

"At the head waters of Boulder and Canyon Creeks there are large bodies of copper ore that carry gold and silver values, and large deposits of magnetite iron ore that carry some gold values.

"At Blackpool there is ore being shipped that carries both lead and silver.

"From the Fog Horn group, at the head of Boulder Creek, there were shipped fifty tons of Galena ore, with a gross value of \$4,000. A further shipment of this ore will be made this winter.

"In addition to this part of the North Thompson Valley being a fine farming and ranching country, it is destined to be one of the richest mineral-producing districts in British Columbia. All it needs is capital for development."



T A R I F F



By J. R. K. BRISTOL

To Manufacturers Who Contemplate Engaging in Export Business

Are you aware that you have the privilege of practically duty free materials for manufacturing for export? Full information on this matter can be obtained from the Customs Department, Ottawa; or from the Manager, The Tariff Department, Canadian Manufacturers Association, Toronto.

BOARD OF CUSTOMS DECISIONS.

Rates of Duty on Several Articles of Commerce are Specified by the Board.

The Board of Customs met in Ottawa on February the 13th, when the following decisions were rendered:—

(1) Basic sulphate of lead, sulphate of lead, or, sublimed lead, declared to be dutiable under tariff item 711. Under this tariff item the rate of duty payable is $17\frac{1}{2}\%$ plus the war tariff of $7\frac{1}{2}\%$ *ad valorem*.

(2) Combined metal melting furnace and plate-finishing and drying machine for newspaper work, from R. Hoe & Company, New York, declared to be dutiable under tariff item 441. Under this item the rate of duty payable is $7\frac{1}{2}\%$ *ad valorem* general tariff.

(3) Broomless floor sweeper, and dustless card stripper, manufactured by William Firth, Boston, both used in fabric mills for collecting waste or sweepings, declared to be dutiable under tariff item 453. Under this tariff item the rate of duty payable is $27\frac{1}{2}\%$, plus the war tariff of $7\frac{1}{2}\%$.

(4) Bisto, per sample, a preparation for thickening soups or making gravy, manufactured by Cerebos, Limited, London, England, declared to be dutiable under tariff item 220. Under this tariff item the preferential tariff rate is 20% with the addition of the 5% *ad valorem* customs war tariff.

(5) Maltose (malt sugar) in powdered form, per sample, manufactured by the Crown Maltose Company, Chicago, declared to be dutiable under tariff item 168. Under this tariff item the rate of duty payable is 3c. per pound and 35% general tariff, with the addition of the customs war tariff.

(6) Gate tops (per sample) for chatelaine bags, declared to be dutiable under tariff item 658. Under this tariff item the rate of duty payable (general) is 20% with the addition of the war tariff of $7\frac{1}{2}\%$.

Departmental Rulings.

Cremora "C S," from the Dry Milk Co., New York, used in the manufacture of confectionery, dutiable under tariff item 220. The rate of duty payable is 25%, with the addition of the war tariff of $7\frac{1}{2}\%$ *ad valorem*.

CUSTOMS ORDERS-IN-COUNCIL.

Drawback of Customs Duty on Ships' Stores Delivered for Vessels Proceeding on Ocean Voyages.

The regulations made and established in the above matter, by Order-in-Council, dated 6th February, 1917, are as follows:

Regulations.

(1) A drawback equal to the customs duty paid may be allowed on ships' stores delivered for ships proceeding on an ocean voyage outside of Canada for use on board thereof: Provided that the Minister of Customs shall define and limit the kind, quantity and class of goods which may be so delivered as ships' stores; and that such stores or any part thereof shall not be reloaded, sold or disposed of in Canada, without due entry and payment of duty;

(2) Before the delivery of stores for the said ships, the applicant for drawback shall notify the local Collector of Customs, in writing, as to the kind and quantity thereof and the time of shipment, and the delivery of such stores on board the ships shall be certified by a customs officer, and by the master or other officer of the ship authorized thereto, in the form prescribed by the Minister of Customs.

(3) The claimant shall not be entitled to receive such drawback until he has furnished to the Minister of Customs satisfactory evidence as to when and where the duty was paid, and such further evidence as the Minister of Customs may deem necessary to establish the claim and the *bona fide* delivery of the stores.

(4) The claim for drawback shall be made and substantiated upon oath before a Collector of Customs, in approved form, to the satisfaction of the Minister of Customs, within six months, after the delivery of the stores in respect of which claim is made.

Drawback on Cotton Fabrics Used in the Manufacture of Rubber Belting, Rubber Tires and Rubber Tubes.

The following regulations have been made by Order-in-Council of the 6th February, 1917, under Section 286 of the Customs Act:

Regulations.

(1) When imported cotton fabrics, on which customs duties have been paid, are used in the manufacture of rubber belting, rubber tires, and rubber tubes, there may be paid a drawback of ninety-nine per centum of the duties paid on the cotton fabrics used in the manufacture of the said rubber belting, rubber tires and rubber tubes.

Provided, however, that such drawback shall not be paid unless the duty has been paid on the cotton fabric, so used as aforesaid within three years of the date of the manufacture of the said rubber belting, rubber tires and rubber tubes;

Provided, further, that drawback shall not be computed in respect of any quantity of such cotton fabric in excess of the quantity of like cotton fabric used in the manufacture of rubber belting, rubber tires and rubber tubes made by the claimant for drawback and exported during the period covered by the claim subsequent to 1st January, 1917.

(2) The said drawback may be paid to the manufacturer of the rubber belting, rubber tires and rubber tubes, subject to the following conditions, viz.:

(a) The quantity of cotton fabric used and the amount of duties paid thereon shall be ascertained.

(b) Satisfactory evidence shall be furnished in respect of the manufacture of the rubber belting, rubber tires and rubber tubes in Canada and their exportation therefrom;

(c) Upon the exportation of the rubber belting, rubber tires and rubber tubes in respect of which drawback is to be claimed, Export Entries, in duplicate, in the usual form (with the words "subject to drawback" marked on the face of the entry) shall be filed with the Collector of Customs at the port of exit from Canada, naming the conveyance by which, and the country or place to which the belting, tires and tubes are to be exported, and fully describing the kind and quantity thereof, and also the marks and numbers on the packages.

(3) The claim for drawback shall be verified under oath before a Collector of Customs to the satisfaction of the Minister of Customs, in such form as he shall prescribe, within one year, after the manufacture of the said belting, tires and tubes in Canada.

The Minister of Customs may also require in any case the production of such further evidence in addition to the usual averments, as he deems necessary to establish the *bona fides* of the claim.

EXPORT PROHIBITED.**Under War Measures Act, Salts of Strontium and Other Compounds Cannot be Exported.**

His Excellency the Governor-General in Council, under and in virtue of the provisions of Section 291 of the Customs Act and Section 6 of The War Measures Act, 1914, is pleased to order and it is hereby ordered as follows:

(b) The exportation of the following goods is hereby prohibited to all destinations abroad other than the United Kingdom, British possessions and protectorates, viz.:

Strontium, all salts of;
Strontium compounds and mixtures containing strontium compounds.

MUST INSERT NUMBER.**Marking of Manifests and Bills of Lading for Exports to the Netherlands.**

For the information of Collectors of Customs and business men generally the Customs Department, Ottawa, has posted the following notice:

A public notice to shippers and shipowners with respect to the marking of manifests and bills of lading for exports to the Netherlands has been issued by the British Board of Trade and published in the *Board of Trade Journal* of the 18th January, 1917, as set forth below, and should be brought to the attention of shippers, shipowners and the trading community generally.

JOHN McDUGALD,
Commissioner of Customs.

EXPORTS TO THE NETHERLANDS.**Marking of Manifests and Bills of Lading.**

Shippers and shipowners trading with the Netherlands are hereby notified that, in the case of the shipment of goods consigned to the Netherlands Oversea Trust, the number of the corresponding Netherlands Oversea Trust permit should be inserted in the manifest against each item of cargo. Bills of Lading relating to such shipments should not be signed unless this permit number appears thereon.

BRITISH IMPORT RESTRICTIONS.**Licenses Must be Obtained from the Controller of Import Restrictions in London.**

Those persons engaged in handling industrial products of Canada have noted, with concern, the recent wide extension in the British Import Restrictions. It should be borne in mind, however, that the severity of these Import Restrictions may be lightened by licenses to import goods into the United Kingdom. In this connection the Department of Trade and Commerce, under date March 1st, instant, makes the following announcement:

(1) As is now well known, there are many articles which the British Government has declared shall not be imported into the United Kingdom without a license therefor being granted by the Controller of Import Restrictions, 22 Carlisle Place, Westminster, London, S.W.

(2) Such import restrictions, however, were imposed with a view to controlling the imports rather than prohibiting them. These British import restrictions apply to British Dominions as well as to foreign countries.

(3) Applications for permission to import such goods into the United Kingdom must be made to the Controller of Import Restrictions by the United Kingdom importer.

(4) The Department of Trade and Commerce has no power to grant licenses to import goods into the United Kingdom, but it has been the practice of the department to assist Canadian exporters, in connection with difficulties which have arisen by reason of such British import restrictions, through the Canadian High Commissioner's office in London, when there appears sufficient justification therefor.

(5) The department can only present the facts to the High Commissioner, so that he may endeavor to prevail upon the

Controller of Import Restrictions to issue a permit for the import of the goods desired.

(6) For all information in connection therewith, further application should be made to the undersigned.

F. C. T. O'HARA,
Deputy Minister.

BRITISH EXPORT RESTRICTIONS.**Important Changes Made in the Procedure to be Followed in Order to Obtain Goods from the United Kingdom.**

The Department of Trade and Commerce also makes the following announcement in respect to British Export Restrictions:

The following regulations in regard to the supply to Canadian firms of all goods on the British list of restricted exports, for which priority certificates are necessary, take effect immediately.

The British Ministry of Munitions in London has asked the Governments of the various British Dominions, Colonies and Dependencies to set up one or more Local Priority Authorities in each country. The work of the Local Priority Authority in Canada will be undertaken by the Department of Trade and Commerce, and Canadian firms wishing to import from the United Kingdom goods on the British restricted list, for which priority certificates are necessary, should observe the following regulations:

(1) Apply to the Priority Branch of the Department of Trade and Commerce, Ottawa, for blank forms of application for priority assistance. Four forms are needed for each order.

(2) If possible keep orders intended for war purposes separate from orders for general commercial purposes, and send in separate affidavits in quadruplicate for each.

(3) Fill in each affidavit fully in quadruplicate, being careful to give all the information asked for. Delay will be caused unless this is done.

(4) Upon receipt of the forms properly filled up and sworn to, if the information given is found to be satisfactory, the Deputy Minister of Trade and Commerce will endorse on all four copies his recommendations for the guidance of the British Ministry of Munitions, and return one copy to the Canadian applicant, who will send it to the British firm with whom his order is placed. It is advisable, when possible, to attach the application form to the order. The British firm will be required to send the Canadian application form to the Ministry of Munitions when asking for a priority certificate. The Ministry of Munitions will not consider applications for the grant of priority certificates in the absence of a definite recommendation from the Canadian Local Priority Authority.

Two copies will be sent direct from the Department of Trade and Commerce to the British Ministry of Munitions, and the fourth copy will be retained for reference on the files of this department.

(5) Any Canadian firm who may hereafter place orders for goods for which priority certificates are required with any British firm, without first applying to the Priority Branch of the Department of Trade and Commerce for assistance, will be notified by the British firm to do so, and no further steps will be taken towards filling the order until the department has received and endorsed the usual applications for priority assistance.

(6) Any person making the affidavit contained in the application form above referred to who knowingly includes therein any false statement or information with intention to mislead is guilty of an indictable offence, and liable to seven years' imprisonment under Section 175 of the Criminal Code.

(7) Where there is any exceptionally strong case of urgency, or a supply that is deemed to be specially important, the reasons for special consideration should be fully indicated, and the latest date by which delivery must be pressed for.

(8) In cases of extreme urgency and importance an order may be placed by cable, and supported by the Priority Branch of the Department of Trade and Commerce, at the expense of the applicant. Full information should be furnished the Priority Branch before this is done.

(9) All communications relating to matters that have been at any time before the Priority Branch should bear the file

number and the priority serial number, so that there may be no delay or confusion in referring to the previous papers.

(10) It will be necessary to send in applications for assistance in obtaining any article for which a priority certificate is required by the British manufacturer, such as steel wire, wire rope, high speed steel, small tools, machinery, and parts thereof, copper wire and cable, Bessemer and open hearth steel, corrugated sheets, tin plates, terne plates, black plates, tinned sheets, lead coated sheets, spring steel and similar articles.

(11) The British Ministry of Munitions most earnestly appeals for the patriotic temporary sacrifice of their own interests by the merchants and public of the dominions and dependencies in:

(a) Endeavoring to do without such supplies as priority is necessary for.

(b) Realizing that priority is only refused with great reluctance in order to conserve the maximum supplies for hastening the allied victory and a satisfactory peace.

(c) Avoiding the importation of such supplies from other countries as cannot be allowed from the United Kingdom, in order to protect British markets from being captured by other countries while the normal British supplier or manufacturer is forcibly shut out.

(12) Any further information will be furnished on application to the undersigned.

F. C. T. O'HARA,
Deputy Minister.

The Department of Trade and Commerce,
Ottawa, March 1, 1917.

SOAP.

Importation of Soap from France Not Prohibited by the Dominion of New Zealand.

Adverting to the notice on page 596 of the *Board of Trade Journal*, of the 23rd November, 1916, relative to the prohibition under Order-in-Council, dated 18th September, of the importation into New Zealand of soap manufactured in or exported from any place other than the United Kingdom or a British possession, save with the consent of the Minister of Customs, the Board of Trade have now received a copy of Order-in-Council, dated 6th November, 1916, amending above-mentioned Order-in-Council by adding the words "or France" after the words "British Possession."

The effect of this amending Order-in-Council is to permit the importation into New Zealand of soap manufactured in or exported from France.—*Board of Trade Journal*, London, Eng., February 8, 1917.

PORTUGAL.

Temporary Duty-Free Importation of Certain Foreign Casks is Allowed.

A decree was published in the *Diario do Governo* for the 16th January, notifying that the provisions of the Law (No. 501) of the 4th April, 1916, respecting the temporary duty-free importation of foreign casks for the purposes specified in the law, are to remain in force until the 31st March next.—*Board of Trade Journal*, London, Eng., Feb. 8, 1917.

LICENSES REQUIRED.

Transit Through France of Goods Sent from the United Kingdom to Switzerland, Italy and Spain, via France.

With reference to the notice under this heading, published at pages 119-122 of the *Board of Trade Journal* for the 11th January last, the Board of Trade desire to draw attention to the fact that when goods which are to pass through France (either by parcel post or otherwise) in transit for Switzer-

land, Spain or Italy, are covered by the prohibition of importation imposed by the Presidential Decrees of the 11th May, the 16th, 26th and 28th September, and the 12th October, 1916, it is necessary to obtain a French import license in respect thereof.

The list of goods covered by the prohibitions in question, and particulars as to the procedure to be followed in obtaining French import licenses in respect thereof (if the goods are of British origin or production), will be found in the notice at pages 210 to 214 of the *Board of Trade Journal*, for the 19th October, 1916.—*Board of Trade Journal*, Feb. 1, 1917.

NOTE.—Full particulars on these matters are obtainable from the Tariff Department, Canadian Manufacturers Association.

SURTAXES ON IMPORTS IN ARGENTINA.

(*Commerce Reports.*)

The American Ambassador at Buenos Aires states that the President of Argentina has signed a decree, in effect February 24, 1917, which imposes for the coming year a surtax of 2 per cent. (of the official valuation) on articles now dutiable at from 10 to 20 per cent. of the official valuations, and a surtax of 5 per cent on goods dutiable at more than 20 per cent. of such valuations. Articles included in the free list, with the exception of books, foodstuffs, coal, drugs, and other articles of necessity, war munitions, Government supplies, etc., are to be subject to a duty of 5 per cent. *ad valorem* (i.e., calculated on the official valuations prescribed by the Argentine Customs Tariff.)

(Articles dutiable at 10 per cent. *ad valorem* or more are already subject to a surtax of 2 per cent. of the official valuation upon importation into Argentina. Import duties and surtaxes are, with the exception of a few articles, calculated on the official valuations of the Argentine tariff rather than on the actual value of the goods.)

FOREIGN TARIFFS.

Argentina.

(*Commerce Reports.*)

Duty on Machine Parts.

A decree of the President of Argentina, issued January 12, 1916, provides that integral parts of machinery, as well as articles indispensable for the operation of machinery, shall be dutiable at a special reduced rate, provided such parts and other articles are not suitable for other use. As it is not always possible to determine the weight of the complete machine, such parts and accessories will be dutiable at the rate prescribed for machinery weighing less than 500 kilos, which is 5 per cent. calculated on a fixed valuation of 0.30 peso per kilo (peso, \$0.965; kilo, 2.2046 pounds). Articles suitable for other uses will not be admitted as machine parts, but will be subject to duty according to their nature.

Bolivia.

Proposed Tariff Revision.

The Bolivian Congress has appointed a Commission to revise the tariff, consisting of the Director of Customs, and an appointee of the Senate, of the House of Deputies, and of the La Paz Chamber of Commerce. The Commission is to consider tariff changes during the first six months of 1917, and is then to make a report to the next Congress.

Brazil.

Classification of Sterilized Milk.

According to a recent decision of the Brazilian customs authorities, sterilized milk is not to be regarded as con-

densed milk, and is therefore not entitled to the preferential duty applicable to shipments of the latter product originating in the United States. The duty on condensed milk imported from the United States is nominally 0.400 milreis per kilo, that imported from other countries being dutiable at 0.500 milreis per kilo. The actual duties, taking into account part payment on a gold basis and the addition of a surtax, amount respectively to approximately 0.691 and 0.855 milreis per kilo (milreis, late quotation, \$0.24; kilo, 2.2046 pounds).

Consular Certificates and Invoices for Travelers' Samples.

The attention of salesmen intending to visit Brazil is again called to the fact that in order to secure the temporary free admission of these samples into that country it is necessary for them to present not only a legalized consular invoice of the samples, but also a consular certificate describing the goods. An American traveler recently presented a consular invoice in proper form, but as he had failed to provide himself with a legalized list of the samples the customs authorities refused to permit their admission under bond or to refund the duties paid upon the re-exportation of the goods.

(The regulations governing the temporary free admission of travelers' samples into Brazil may be obtained from the Canadian Manufacturers Association, Tariff Department.)

Ecuador.

New Tariff and Customs Regulations.

Measures for the simplification of the Ecuadorian customs tariff, which have been under consideration for a long time, have finally been embodied in a new tariff law, which went into effect January 1st, 1917. The most important provision in the new law is the incorporation of the various customs surtaxes amounting to 125.5 per cent. of the duty with the regular customs duties. Consumption taxes on tobacco and alcoholic liquors have likewise been combined with the import duties, and various port and customs charges have been consolidated, the amounts remaining the same. Minor changes are also made in the schedule of export duties and the various surtaxes other than the customs handling charge are abolished. The local surtaxes on both imports and exports remain unchanged.

While the new rates of duty are in most cases approximately equal to the former rates as increased by surtaxes, there is a tendency toward greater specialization, the new tariff specifying 58 classes of articles, each subject to a different rate of duty, as compared with 38 classes in the old tariff. The new schedules are extended by the addition of a large number of articles not previously specified.

Extension of Free List.

The following are among the most important of the new articles added to the free list: Aeroplanes, electrical insulators, churns, agricultural sprayers, unginned cotton, masts, asphalt, iron pipes for irrigation, charcoal, assay furnaces and vessels, milk sterilizers, brooms, milk cans, water-closets, formaldehyde, unwrought marble, sheep shears, scythes, expanded metal, injectors for steam boilers, telegraph and telephone poles, quinine, tanks of a capacity of over 2,000 gallons, for irrigation, and certain disinfectants. The provision authorizing the executive to exempt additional articles intended for public works in the municipalities is omitted in the new law. Articles not specified in the tariff are subject to a duty of 0.68 sucre per kilo, net weight, which is approximately equivalent to the former rate. In the case of most articles specified in the tariff the new schedules will not result in any material change in the amount of duty paid.

Amendments to Tariff Law.

Amendments to the organic customs law, which were adopted at the same time as the new schedules, but are not to go into effect until June 1, 1917, contain some radical modifications in former provisions, among them being the abolition of the importer's manifest (*manifesto por menor*) and the requirement that entry be presented within two working days (7 days for shipments to certain provinces) after the arrival of the vessel, instead of 8 days, under penalty of fine. The time limit for the clearance or re-exportation of shipments is reduced from three months to 10 or 15 days, according to destination. Another amendment provides that goods arriving in a damaged condition, which are not claimed within 24 hours after notification to the consignee, will be regarded as abandoned, and will be disposed of by the customs. Under the old law such shipments were inspected and placed in a fiscal warehouse for the account of the consignee. Where goods are sold by the customs because of failure to pay fines or for other reasons, the entire proceeds are to revert to the Government, no portion of the surplus remaining after liquidation of customs charges and penalties being turned over to the owner.

Guatemala.

New Customs Tariff.

A new tariff has been adopted on Guatemala and is to go into effect March 15, 1917, according to a report from Consul Samuel C. Reat, Guatemala City, dated January 5, 1917. It appears that comparatively few changes have been made in the former schedules and that the present high level of duties will be maintained.

AUSTRALIA.

Imports of Textiles and Apparel from Germany and Austria-Hungary in 1912 and 1913.

The Imperial Trade Correspondent at Perth (Mr. A. M. Oliphant) has forwarded a statement, prepared by the West Australian Government Statistician, showing the trade of Germany and Austria-Hungary in apparel and textiles in the Commonwealth of Australia during the years 1910-13. From this it would appear that the total value of imports of this class of goods into Australia during the four years stated amounted to over £7,250,000, of which Germany supplied to the value of £6,679,785.

The following table shows the values of the principal articles contributing to the total German and Austrian trade in textiles and apparel with Australia in the last two years prior to the war:

	Imports from Germany.		Imports from Austria-Hungary.	
	1912	1913	1912	1913
Boots and shoes....	£10,669	£14,036	£25,684	£25,700
Gloves	183,880	167,577	20,661	11,663
Hats, caps and minor articles for	43,513	35,887	17,296	25,030
Socks and stockings	193,660	233,650	.....	.....
Trimnings for mantles and dresses	159,688	95,081	6,700	3,916
Minor articles of ap- parel	135,255	116,834	35,674	48,423
Other apparel	417,040	373,902	11,971	12,126
Mantle and furniture drapery (including cushions, etc.) ...	59,422	55,500	5,313	6,535
Cotton and linen piece goods	144,282	142,205	1,193	1,670
Silk piece goods ...	87,561	85,321	9,959	9,879
Velvets & velveteens	323,770	220,748	3,002	4,004
Woollen piece goods	96,054	91,270	1,125	1,287
Other textiles	68,423	70,134	5,001	4,940
Total	£1,923,217	£1,702,145	£143,579	£155,173

As the Government Statistician points out, these goods will now have to be obtained from other sources, and in this connection it is interesting to note the growth of Japanese trade with Australia in textiles. The total imports of apparel and textiles into Australia from Japan rose in value from £389,360 in 1910 to £475,954 in 1913, and £733,101 in the year

ended 30th June, 1915. The chief items contributing to this increase were hats and caps, which increased from £16,587 in 1913 to £46,075 in 1914-15, unenumerated apparel (£74,492 in 1913 and £104,816 in 1914-15), and silk piece-goods (£200,757 in 1913, and £456,254 in 1914-15.)—*Board of Trade Journal*, Feb. 1, 1917.

FOREIGN TRADE OF CANADA.

IMPORTATIONS.

(Comparison 1915, 1916, 1917.)

	Month of January.			Ten Months Ending January.		
	1915.	1916.	1917.	1915.	1916.	1917.
Dutiable goods	\$18,183,179	\$27,503,949	\$39,855,400	\$234,008,746	\$225,454,435	\$370,646,468
Free goods	12,116,978	22,666,516	32,467,674	145,038,331	168,639,353	304,318,080
Total	\$30,300,157	\$50,170,465	\$72,323,074	\$379,047,077	\$394,093,788	\$674,964,548
Coin and bullion	638,174	11,716,848	2,928,278	131,257,281	31,618,851	25,922,701
Grand total	\$30,938,331	\$61,887,313	\$75,251,352	\$510,304,358	\$425,712,639	\$700,887,249
Duty collected	\$5,125,009	\$9,962,556	\$12,762,621	\$63,706,075	\$81,267,860	\$119,141,351

EXPORTATIONS.

(For January.)

	—1915—		—1916—		—1917—	
	Domestic.	Foreign.	Domestic.	Foreign.	Domestic.	Foreign.
The Mine	\$3,508,769	\$11,363	\$4,654,815	\$7,122	\$6,836,464	\$4,025
The Fisheries	1,703,443	6,068	2,437,715	55,697	2,784,824	106,940
The Forest	1,811,049	644	3,243,360	39,944	3,695,352	181,227
Animals and their produce	5,661,172	127,776	10,203,827	359,454	11,745,761	1,114,120
Agriculture	8,082,571	45,329	15,402,976	39,927	22,550,924	938,014
Manufactures	7,769,146	1,073,840	47,015,283	1,112,972	50,814,082	768,248
Miscellaneous	59,448	106,712	773,208	100,746	678,852	333,233
Total merchandise	\$28,595,598	\$1,371,732	\$83,731,184	\$1,715,862	\$99,106,259	\$3,445,807
Coin and bullion	123	862,884	200	112,536	9,560	133,929
Grand total, exports....	\$28,595,721	\$2,234,616	\$83,731,384	\$1,828,398	\$99,115,819	\$3,579,736

EXPORTATIONS.

(Ten Months Ending January.)

	—1915—		—1916—		—1917—	
	Domestic.	Foreign.	Domestic.	Foreign.	Domestic.	Foreign.
The Mine	\$42,469,353	\$287,937	\$53,688,992	\$7,272,181	\$70,562,024	\$206,740
The Fisheries	15,820,794	110,461	18,541,413	141,642	20,860,380	278,352
The Forest	36,867,152	477,634	45,428,289	424,033	49,833,800	486,214
Animals and their produce	64,097,884	2,458,200	88,763,256	2,553,417	105,332,667	5,030,620
Agriculture	114,691,494	34,885,845	217,909,912	17,150,981	340,002,369	6,068,031
Manufactures	60,956,072	6,686,842	166,414,552	6,865,568	368,655,496	6,931,919
Miscellaneous	515,888	3,105,714	4,518,818	1,283,835	5,489,336	1,468,893
Total merchandise	\$335,418,637	\$48,012,633	\$595,265,232	\$35,691,657	\$960,736,072	\$20,470,769
Coin and bullion	568	5,042,231	315	103,263,555	85,952	196,104,655
Grand total, exports ...	\$335,419,205	\$53,054,864	\$595,265,547	\$138,955,212	\$960,822,024	\$216,575,424

UTILIZATION OF FISH WASTE.

Practical Methods of Converting Offal to Economic Use Required.

The profitable utilization of the immense quantities of waste material which characterize practically every branch of the fisheries presents one of the chief problems in securing efficient conduct of the Canadian fishing industry. As a result of investigations on the Pacific coast it has been estimated that the sheer waste of the fisheries of Alaska amounts to 70,000 tons per annum, and of those of British Columbia at from 15,000 to 20,000 tons. The proportion of waste material in the lobster canning industry is extremely high. Mr. R. H. Williams, of Halifax, makes the startling assertion that of 32,000,000 pounds of lobsters required for an average Canadian season's pack of 160,000 cases only 6,500,000 pounds are utilized, 25,500,000 pounds being absolutely wasted. In other

words, the lobster industry as now conducted uses only 20 per cent. of the raw material. Even under such conditions the annual value of this industry to the Dominion is normally around \$4,000,000.

From the foregoing figures it will readily be appreciated that few industrial improvements could render more substantial aid to the fishing interests than the perfection of practical methods of converting the offal to economic use. Experiments now being conducted by Mr. J. B. Fielding for the Commission of Conservation will prove of material service in solving this problem.

The passing of stringent temperance acts in various provinces has not cooled the courage of several Montreal financiers, who are associating themselves with the American Brewing Co., Limited, Montreal. This new incorporation is authorized to use \$500,000.

FINANCING SALES ABROAD BY DRAFTS

Useful Advice for the Business Office, as extracted from a recent issue
of the American Express Company's Foreign Trade Bulletin

EXTENDING credit to foreign buyers does not involve a tie-up of the manufacturer's capital when shipments are financed by drafts. No manufacturer of good standing need wait for his money on such a sale. His draft against his foreign customer, drawn payable to his own order and endorsed with his own signature, can be discounted, thus providing the manufacturer with the funds necessary for his own current business.

Discounting charges are paid usually by the foreign buyer, because the buyer receives time accommodation, for which he is willing to pay. These charges may or may not be apparent on the face of the draft itself, although the net result is the same in that the drawee pays costs. For instance, most dollar drafts against Far Eastern importers, as well as some against South American drawees, bear the clause, "Payable with interest at six per cent. per annum from date of issue to approximate due date of arrival of cover in New York." The use of that clause varies according to the country in which draft will be collected, and according to the terms of sale agreed upon between buyer and seller.

Why Importers Demand Credit.

The reason for the foreign customer's willingness to pay costs of discounting drafts is identical with the reason for his demand for credit. In most foreign territories, particularly in South America and the Orient, money rates are high. Local banks charge borrowers anywhere from eight to eighteen per cent. for money advanced. The local importer who does business with American manufacturers on a cash basis therefore penalizes himself by paying the high money rate if there is any chance of securing goods on credit terms that permit him to pay six per cent. for the accommodation under time drafts.

European exporters have always recognized this condition and for the money rate reason have been liberal in credits. That is, they have been willing to sell foreign buyers under "documents against acceptance of draft" terms, whereby the purchaser obtained accommodation on a six per cent. basis, and the discounting banker carried the credit.

In between the American manufacturer and his foreign customer comes the banker. The banker really extends the credit when he discounts a draft. The banker is protected primarily by the endorsement of the manufacturer. At the foreign end the bank is protected by the control of the shipment itself, which is represented by shipping documents attached to the draft. The foreign buyer cannot obtain the shipment until he has paid or "accepted" the draft in the banker's possession. The act of acceptance consists in the endorsing of the draft by the buyer abroad with his signature and the date. Not until such acceptance or payment can the buyer obtain the bills of lading controlling the shipment.

Figuring Amounts on Dollar Drafts.

In drawing a dollar draft the American manufacturer has just one thing to bear in mind—the cash amount he must receive to clear himself at time the draft is discontinued. To show how a \$1,000 shipment goes forward under a draft for \$1,027.50, so that the manufacturer may "break even," consider the following sale to a Buenos Aires customer under the common credit terms of "ninety days." Assume that amount of manufacturer's invoice, including cost, insurance,

freight and incidental charges, is exactly \$1,000. Interest is usually figured from date of sailing, and the charge would cover 150 days; 30 days to Buenos Aires, 90 days for the term of draft, and 30 days for return of funds. Interest at 6 per cent. for 150 days is \$25. To this should be added the bank's usual collection commission, say one-quarter per cent., or \$2.50. The draft drawn by the manufacturer should therefore be for \$1,027.50, which, when discounted in New York, would net the manufacturer the needful \$1,000.

Dollar drafts should always be drawn with the clause: "Payable at the holding bank's selling rate of exchange for sight bills on New York." Drafts, as well as invoices, marine insurance policy, consular invoices, etc., should be drawn *in duplicate*, so that the extra set can be sent forward by a different steamer, to protect against possible loss of originals in the mail.

Collection Instructions Required.

American manufacturers should always provide bankers with definite instructions as to conditions under which controlling documents (bills of lading and insurance policies) should be surrendered to drawees. That is, whether such documents are to be delivered upon "acceptance" of draft—or against "payment." In certain lines the custom is to ship goods under time drafts, but to deliver documents only upon payment. The goods remain under control of the collecting bank for the time intervening before payment. In these matters bankers always require instruction, as well as on the "protesting" of unpaid or unaccepted drafts.

Procedure in drawing drafts often varies, according to the country of destination. In Australia, for instance, an important "colonial clause" on sterling drafts simplifies the figuring of interest and exchange, while a change from draft to cheque form for collections on certain European countries saves appreciable amounts for stamp fees.

The foreign trade information bureau will be glad to help any inquirer with information on the right way to draw foreign drafts in dollars or foreign currencies; how to figure discounts; methods and rates of collection in various countries, and special conditions affecting trade financing in different territories overseas.

The Ford Tractor Co., of Canada, Limited, Toronto, has just been incorporated with a Dominion charter, authorized capital \$10,000,000. This company has acquired the rights of the Ford Tractor Company Incorporated, including the patent rights within the Dominion of Canada for the Ford Tractor. No indication is given yet as to when the company will start operations.

We are pleased to note the incorporation of Snells, Limited, of Toronto. This company will take over the business of Mr. W. H. Snell, baker and confectioner, and carry it on in a more extensive scale. Many people will remember that this business started in a very small way, and those responsible for the improvement are to be congratulated on the fact that an authorization of \$100,000 capital was considered necessary.

Trade Enquiries

These enquiries come into our hands from various sources. The Weekly Bulletin of the Department of Trade and Commerce, from which the enquiries indicated in the sub-heading allotted to them are taken, should be read regularly by those interested in foreign trade. It will be sent free on application to the Department at Ottawa. The names connected with all those enquiries can be furnished direct from the Commercial Intelligence Department, Canadian Manufacturers Association, Toronto.

IMPORT TRADE INQUIRIES.

745. **Bristles, Wool and Hides.**—A well known firm in Montevideo claims to be in a position to export the above mentioned articles in considerable quantities, and solicit correspondence from manufacturers who may be in a position to import direct.
746. **Thorium Nitrate.**—A Western manufacturer is desirous of obtaining supplies of this material.
747. **Mantle Stockings.**—A Western manufacturer requires supplies of Mantle Stockings for use in the manufacture of Gasoline Mantles.

DOMESTIC TRADE ENQUIRIES

748. **Quartz.**—A party in Toronto requires quantities of quartz in pieces of about three inches in diameter. Anyone having supplies should communicate with this office.
749. **Ferro Metals.**—A party in Montreal desires to get in touch with firms able to supply ferro-chromium powder, ferro-aluminum powder and ferro-nickel powder.
750. **Formed Wire Badge Pins.**—A Western manufacturer of advertising novelties desires to get in touch with a

Canadian manufacturer who will be able to supply him with fasteners and pins used on the back of badges and other advertising novelties. We have a sample of each class here and will supply it to interested parties. The goods are required in 5,000 lots.

751. **Agencies.**—We are in communication with a Toronto gentleman who desires to represent one or more Canadian manufacturers in the Toronto district. First class references are supplied.
752. **Mailing Cases.**—A party in Southern Ontario would like to hear from manufacturers of mailing cases.
753. **Labelling Machines.**—A manufacturer of food products in Montreal would like to get in touch with parties able to supply a labelling machine for use in their business.

EXPORT TRADE ENQUIRIES.

754. **Steel Rag Cutters.**—We have an enquiry, for export to France, for Steel Blades to cut rags, the blades to be 30 centimeters long by 10 to 15 centimeters wide.
755. **Brass and Cupro Nickel Cups.**—A Portuguese firm operating an office in New York would like to hear from Canadian manufacturers able to supply quantities of these cups for small arms ammunition.
756. **Machinery, Metals and Technical Goods.**—We have an enquiry from a large firm in Italy, offering New York references, regarding supplies of above mentioned materials.
757. **Agency.**—A business agency house in Vancouver, claiming to have good connections in China, Japan and other oriental eastern countries desires to hear from Canadian manufacturers who wish to do business in

For
Factories

NEPONSET Built-Up Roof

Remember
NEPONSET
TWIN
SHINGLES—
The Roof
For Your
HOME

Neponset Built-Up Roof, laid according to our Standard Specification, has uniformly given the greatest satisfaction on factories and other buildings.

Such a roof meets every requirement of the Canadian climate for use on Pitch and Sawtooth Roofs, as well as on flat and other types of roofs.

Write us for full information.

BIRD & SON, Dept. I. HAMILTON, ONT.

The Largest Manufacturers of Roofings,
Wall Board, and Roofing Felts in Canada.

Warehouses: Winnipeg, Vancouver, Calgary, Montreal,
St. John, Edmonton.



We name below a few of the well-known factories with Neponset Built-Up Roof:

Russell Motor Car Co., Toronto
Wm. Wrigley, Jr., Toronto
Dominion Power and Transportation Co., Hamilton
McLaughlin Carriage Co., Oshawa
Ford Motor Co., Ford
Dominion Sugar Co., Chatham
Canadian Westinghouse, Hamilton
Steel Co., of Canada, Ft. William



Yes, it's an unpleasant duty!

Standing between your time-keeper and your employees, in a pay-time dispute, is certainly disagreeable—especially when you have nothing to prove which is right.

And you can't expect that real, satisfying proof if you haven't a Printed Record of the original pay-roll entry. That's exactly what you do get with an

INTERNATIONAL TIME RECORDER

If you investigated amongst many of the most up-to-date plants in Canada or in civilized Europe, you would find our claims substantiated. You'd find them using International Time Recorders.

Dial Recorders—Card Recorders—Cost-keeping Recorders—in dozens of styles, and one of them is sure to be a money saver for you.

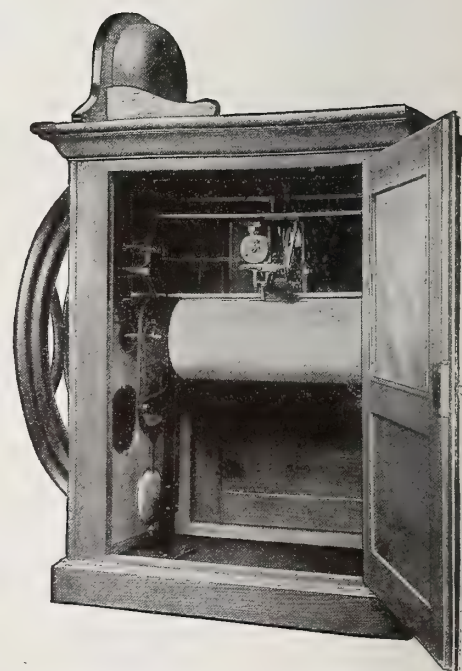
The International Time Recording Co. of Canada, Limited



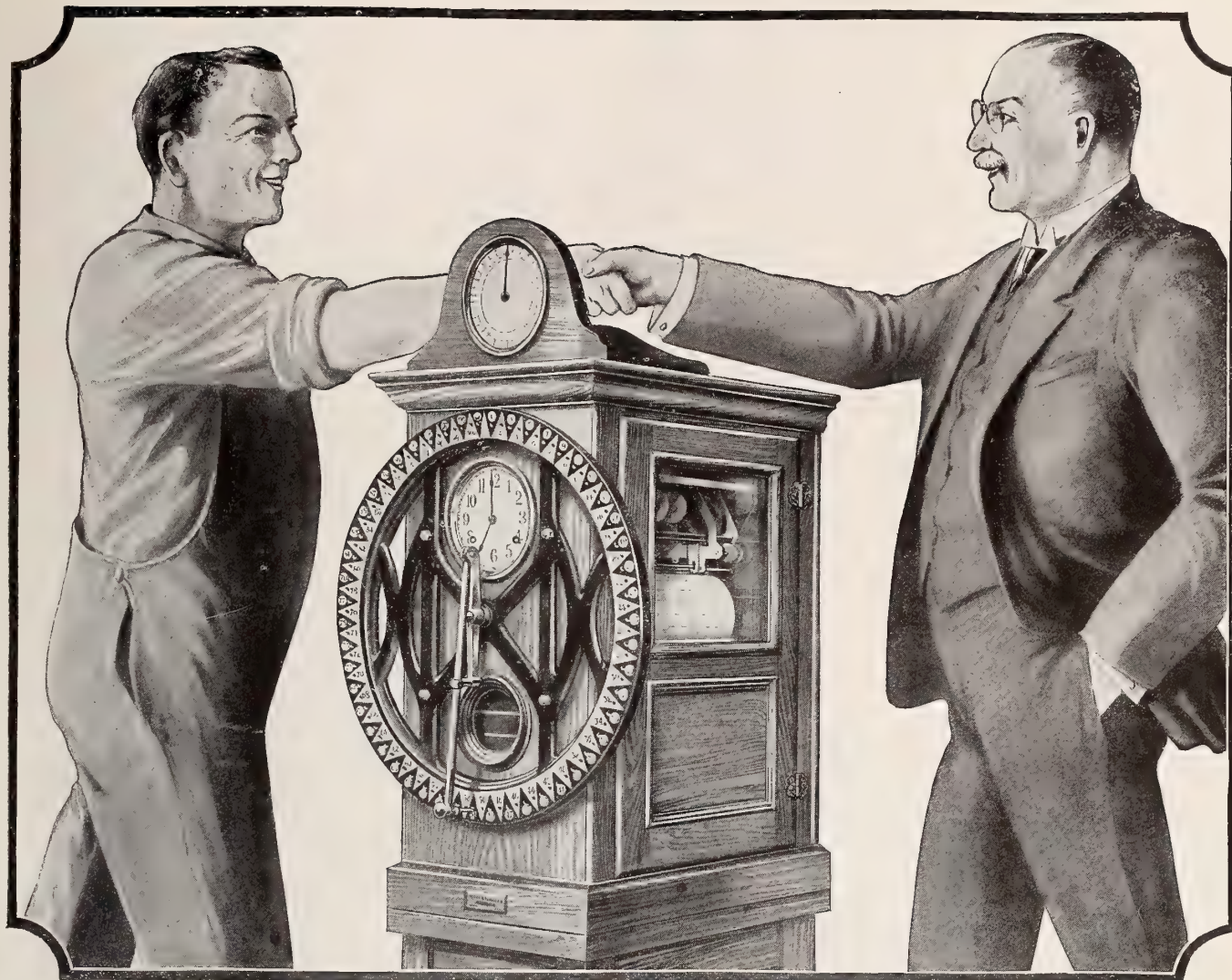
Anderson St., TORONTO
F. E. MUTTON, General Manager
MONTREAL: Cartier Bldg.
Cor. McGill and Notre Dame Sts.

WINNIPEG:
400 Electric Railway Bldg.

VANCOUVER:
817 Pender St. W.



The Interior of an Up-to-date
International Dial Recorder



“Contented Minds”

Surely the employee—who goes home at night knowing that the record of his time was made by himself and is unchangeable—has a contented mind.

Surely the employer—bringing a busy day to an end, and feeling that he is treating his employees fairly and squarely—must have a contented mind.

INTERNATIONAL TIME RECORDER

Any man will do his best for those who treat him right. We surely must be correct, as there are millions of dollars paid in wages every week that are recorded by International Time Recorders. Look around you and see what others are doing.

Let us send you our latest folders—interesting !

The International Time Recording Co. of Canada, Limited

Anderson St., TORONTO—F. E. MUTTON, General Manager

WINNIPEG :
400 Electric Railway Bldg.

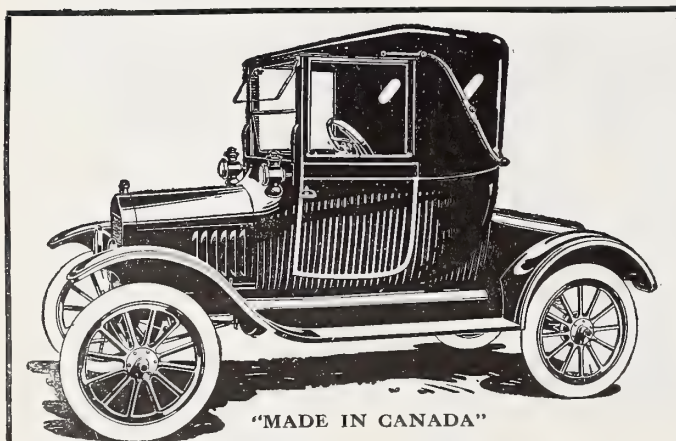
VANCOUVER :
817 Pender St. W.

MONTREAL : Cartier Bldg.
Cor. McGill and Notre Dame Sts.



these countries on a commission basis. They state that they are in a position to offer high references and first class services.

758. **Sweet Grass Baskets.**—A novelty house in California would like to hear from suppliers of Sweet Grass Baskets to be used as sewing baskets and as candy packages.
759. **Wall Lamps.**—A New York exporting house is interested in obtaining Wall Lamps from Canadian manufacturers for the South African market.
760. **Bailing Presses.**—House in Portugal, reported to be serious and respectable, requires offers on suitable machinery for bailing daily 900 packages of straw, weighing each 30 kilograms, together with portable engine and boiler of sufficient power.
761. **Power Hack Saws.**—Correspondent in the Belgian Congo wishes to receive offers on alternating vertical multiple-blade power hack saws. The French language should be used.
762. **Toys, Hardware, Novelties.**—Retail dealer in hardware, toys, glassware and novelties of all sorts in Spain, solicits catalogues and offers in the Spanish language.
763. **Rolled Gold Jewelry, Chains, Mesh Bags.**—Spanish house, said to bear a high reputation, requires offers on rolled gold jewelry, gold filled chains, gold and silver mesh bags, etc., and solicits catalogues and prices which may be in English.
764. **Railway Picks.**—Danish house, offering reference to an American manufacturer and to a Copenhagen bank, requires offers on 30,000 railway picks for Russia, payments cash against documents in New York. The English language is understood.



The 1917 Ford Coupelet \$695

f.o.b. Ford, Ont.

IT IS THE CAR of comfort, quality and refinement for business and professional men—efficient in high mileage—on low gasoline cost—easy on tires—provides open car convenience, with closed car protection from weather when needed.

Buy a Ford this year and save money—when saving is a national duty.

Ford Motor Company of Canada
Limited
FORD - ONTARIO

765. **Sole Leather.**—Correspondent in Brazil submits sample of sole leather and solicits correspondence in the Spanish or Portuguese language from manufacturers interested in Brazilian business in this line which is described as important.
766. **Shoe Leather.**—Portuguese house, said to be trustworthy and active, is in the market for black and colored glazed kid, box calf and other leathers for shoe manufacturers. Offers preferably in the Portuguese language.
767. **Railway Cars.**—Concern in Spain, locally considered of good reputation, has orders in hand for railway cars and solicits correspondence in the Spanish language.
768. **Leather.**—Concern in France, offering to remit cash with order, seeks samples and offers in the French language on black glazed and patent kid and split leathers for shoe manufacturing.

EXPORT TRADE ENQUIRIES TAKEN FROM THE WEEKLY BULLETIN OF THE DEPARTMENT OF TRADE AND COMMERCE.

769. **Street Cars.**—An Italian street railway wishes to secure in Canada rolling stock for an extension of its line as follows: Four carriages with motors, 10 good cars, 3 third-class cars, 3 first-class cars. Specifications on application.
770. **Steel Shafting.**—A manufacturers' agent prominently connected with and favorably known to the wholesale trade of St. John's desires to be put in touch with Canadian manufacturers of cold-rolled steel shafting.
771. **Iron Pipe.**—A Newfoundland importer asks for Canadian manufacturers of iron drain-pipe, 2 inch and 4 inch.
772. **Two-Horse Shovels and Excavating Machinery.**—A firm of contractors in the Midlands, would be glad to receive catalogues and prices from Canadian manufacturers of two-horse and other excavating machinery.
773. **Birch Veneer.**—A Glasgow firm inquires for Canadian manufacturers specializing in the cutting of 3-16 inch birch veneer, unpolished. State quantities willing to ship to Liverpool, London or Glasgow.
774. **Tow.**—A Japanese merchant wishes to secure supplies of tow suitable for stuffing seats, etc.
775. **Representation in China.**—An English commission merchant in Shanghai, China, who has the Chinese agency for a number of important British exporting houses, would like to represent Canadian houses in the following lines: grain bags, biscuits, canned fruits and provisions, confectionery, cotton goods, window glass, condensed milk, nails, paper, screws, sugar, tobacco leaf, etc. Sample of a grain bag, for which there is a very large demand, has been forwarded to the Commercial Intelligence Branch of the Department of Trade and Commerce. Any Canadian manufacturer who wishes to inspect it may borrow it for the purpose.
776. **Acetic Acid.**—A Lancashire firm asks to be placed in touch with Canadian manufacturers of acetic acid, of which they seek supplies.
777. **Lubricating Oils.**—A Cape Province firm operating throughout South Africa wants to purchase a complete range of Canadian-made lubricating oils.
778. **Formaldehyde.**—A London company will be pleased to receive offers of formaldehyde, 40 per cent. volume, from Canadian manufacturers. They purchase in lots varying from 5 to 25 tons.

Among the Industries

Under this heading are published items of news of current interest concerning the activities of Canadian manufacturers. Information about changes of interest, enlargement of plants, and plans for future developments are always welcome, and are published free of charge, provided they should not be properly classified as advertisements.

* Items prefixed with an asterisk are based on official information received in each case from the companies mentioned. Other items, while secured usually from reliable sources, have not the same authoritative origin.

ALBERTA.

Redcliff.

Work has been started on the erection of an addition to the plant of the Canadian Foundry and Machine Company. This firm has secured the contract for installing the water-sprinkling system in the Lake of the Woods mill at Medicine Hat.

White Court.

Work will start soon on the erection of a lumber mill near here, to cost \$18,000, by W. H. Hibson, 11432 79th Street, Edmonton.

BRITISH COLUMBIA.

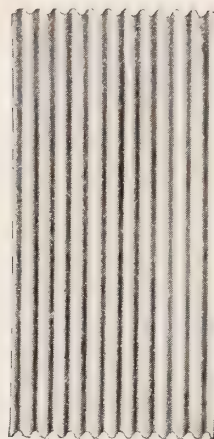
Ladysmith.

The Ladysmith Smelting Corporation, Limited, intend to expend \$100,000 for enlargements to present smelter. Superintendent, W. J. Watson.

Princeton.

The Princetown Creamery Co., Limited, are considering the erection of a \$5,000 creamery.

"Metallic" Building Materials

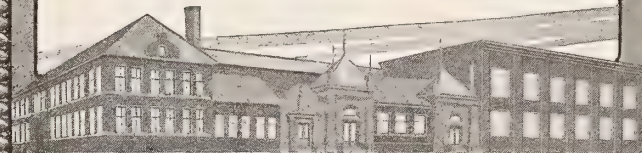


"EMPIRE" CORRUGATED IRON

Splendid quality.
Extra durable.
Sheets always
even and true—
thus quickly and
cheaply put up.

Send for Prices

The Metallic Roofing Company, Limited
MANUFACTURERS, TORONTO and WINNIPEG



STRUCTURAL STEEL WORK OF EVERY DESCRIPTION.

BUILDINGS

BRIDGES

PENSTOCKS

ROOF TRUSSES

COLUMNS, ETC.

TANKS



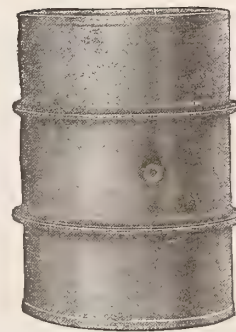
TOWERS

Main Plant of **MACKINNON, HOLMES & CO., LIMITED, SHERBROOKE, QUE.**

Have you considered the advantages of Smart-Turner Steel Barrels?

If not, it will pay you to send
for No. 13 catalogue.

The Smart-Turner Machine Co., Ltd.
Hamilton - Canada



Vancouver.

As the first step towards the establishment of a big ship-building plant at Vancouver, the firm of John Coughlan and Sons recently took out a building permit for the erection of machine shops and mould loft at False Creek.

A new industry has located here, known as the Maritime Motor Company. This firm has the exclusive rights to manufacture the only type of gasoline-driven mining and logging locomotive built in Canada. The Dominion Safe Works will also establish in Vancouver in the near future, a site having been secured on the industrial island.

MANITOBA.**Winnipeg.**

The Swift Canadian Company, Louise Bridge, Elmwood, have purchased a site on which they intend to erect a \$3,000,000 abattoir.

The Richardson Grain Separator Company, Minneapolis, Minn., have purchased a site at Winnipeg Avenue and Myrth Street, on which they intend to erect an industrial plant.

NEW BRUNSWICK.**Fredericton.**

A company is being organized here to manufacture cement products. W. C. E. Richard is interested in the enterprise.

Newcastle.

Work on the erection of the new pulp mill at Millerton is now progressing rapidly. A crew of forty men are employed in the construction work, and the machinery has all been ordered and is expected to arrive shortly. It is the expectation of the company to begin the manufacture of pulp early in April. The company that will control the mill has just been incorporated under Dominion charter as the New Brunswick Sulphite Fibre Co., Limited, with a capitalization of \$200,000.

NOVA SCOTIA.**Sydney.**

Announcements by officials of the H. Koppers Company, Pittsburgh, manufacturers of by-product ovens, indicate that negotiations are now under way between themselves and the Dominion Iron and Steel Company, of Sydney, for the construction of a large number of by-product coke ovens which, it is said, involve a sum between \$2,500,000, and \$3,000,000. The ovens will be erected at Sydney, Nova Scotia, it was stated, but when work will begin is not known at present.

ONTARIO.**Aylmer.**

The Carnation Milk Products Company of Seattle, Wash., the manufacturers of Carnation Condensed Milk, have purchased the two factories of the Aylmer Condensed Milk Co. at Aylmer, Ont., formerly operated by the Dominion Cannery. The new company is already operating the plants.

Belleville.

Work is in progress on the tire factory for Maple Leaf Tires, Limited, 40 Bridge Street, to cost \$100,000.

MANUFACTURING SITES AND BUILDINGS

Special Sale of Desirable Properties

LOCATIONS—*The Rathbun Company*, having discontinued the manufacture of Lumber, etc., have some very desirable properties at Deseronto, Ontario, to dispose of, which are especially adapted for manufacturing purposes, consisting of large

Stone Saw Mill Building, Machine and Blacksmith Shops, Car, Ship and Other Woodworking Plants, Coal Yard, etc., etc.

with large area of STORAGE GROUNDS. Extensive frontage on the Bay of Quinte with SPACIOUS DOCKS AND RAILWAY TRACKS. Also VACANT LANDS suitable for factory sites. Rail and water transportation facilities. CHEAP POWER supplied by The Hydro-Electric Power Commission of Ontario.

Deseronto is situated on the Main Line of The Canadian Northern Railway about midway between Toronto and Montreal. Corporations or individuals seeking sites for location in Canada will find it to their advantage to correspond with

THE RATHBUN COMPANY

DESERONTO

ONTARIO

CANADA

WELDING AND CUTTING



Results are certain when a steady flow of pure acetylene gas is secured. Without this, it is practically impossible to secure the even, intense flame so necessary for effective welding and cutting.

Welders, realizing this, are now using

IMPERIAL CARBIDE

because it produces acetylene of unusual purity.

IMPERIAL CARBIDE is a superior grade of Calcium Carbide—made by the most modern methods from the best raw materials obtainable.

Imperial Carbide can be obtained direct from our Works or from any of our distributing points conveniently located throughout Canada.

Write for quotations and further information.

Union Carbide Company of Canada, Limited

Works : WELLAND

Head Office : DOMINION BANK BLDG., TORONTO



Plenty of White Coal!

Thanks to Hydro, you can be independent of coal tie-ups. You can be independent of coal advances. You can buy power that has grown constantly cheaper from a concern built by the people and run for them at cost.

We shall welcome your inquiries.

Toronto Hydro-Electric System

226 Yonge

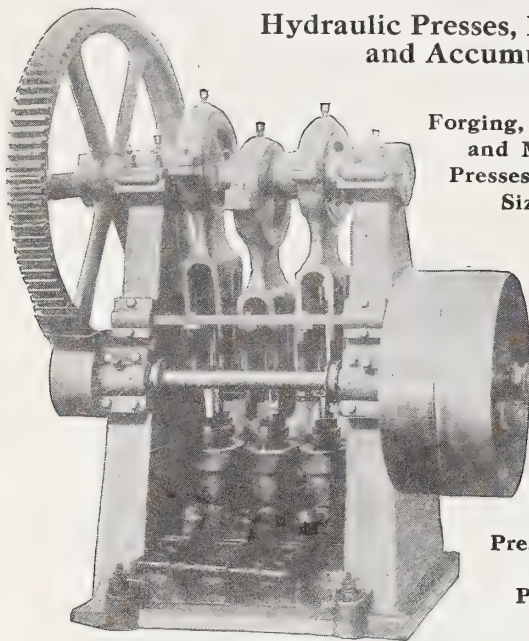
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PRESSES

Made in Canada

Hydraulic Presses, Pumps
and Accumulators

Forging, Nosing
and Marking
Presses for all
Size Shells



Presses for
General
Purposes

WILLIAM R. PERRIN, Limited
Toronto, Canada

EXPORTERS OF

Reed Organs, Piano Stools,
Music Cabinets.

Catalogue B.



The Goderich Organ Co. Limited
GODERICH, CANADA



Closet Seats,
Flush Tanks,
Medicine Cabinets,

Everything for the Bathroom.

Write for Catalogue C and Price List.

Campbellford.

Work has begun on the rebuilding of the Dickson Bridge Company's plant here, which was burned some weeks ago. It is stated that the National Manufacturing Company, of Ottawa and Brockville, have purchased a controlling interest, but that the firm will still be known as the Dickson Bridge Works Company, Limited. Men are now at work reconstructing the buildings. Mr. A. H. McKeel has charge of the work. As the pay roll of the works formerly amounted to about \$4,000 per week, the industry is a big asset for the town.

Carleton Place.

A well-known woollen mill, operating here under the name of Hawthorn Mills, has now taken out a charter, and maintains the old name with the addition of "Limited."

Elmira.

The Colonial Knitting Company is considering the erection of a knitting mill. Work to start next summer.

Galt.

The factory of Newlands and Company was damaged to the extent of several thousand dollars, covered by insurance.

Guelph.

We note that the Aspinwall Company, manufacturers of potato machinery, have taken out letters of incorporation in Canada, and will now be known as the Aspinwall Canadian Co., Limited. We hope that the concentration of some of the company's affairs in Guelph will lead to closer relationship with Canada than has previously been the case.

Hamilton.

Factory owned by Allith Manufacturing Company, 47 Bay North, was damaged by fire to the extent of \$5,000.

Kitchener.

V. O. Phillips and Sons, of this city, have made application for a permit to erect a new addition, 60 by 100 feet, to the plant of the Twin City Oil Co., for the purpose of manufacturing a visible gasoline pump, having purchased the Canadian rights.

London.

Plans are being prepared for a one-story brick boiler-house, to be erected by the Middlesex Mills Co., Dundas St., at a cost of \$10,000.



Canadian Pacific Railway Bridge, Trenton, Ont.
25 Spans, Weight 2,500,000 Lbs.

The HAMILTON BRIDGE WORKS Company, Limited

HAMILTON, CANADA

ENGINEERS, MANUFACTURERS, CONTRACTORS

For Steam Railways, Electric Railways, Highways, Etc. For Factories, Offices, Warehouses, Power Stations, Mill Buildings, or any other purposes

STEEL Bridges Buildings

John Morrow Screw & Nut Co., Limited

SERVICE—During the past year it has been extremely difficult to give our customers the deliveries to which they are entitled. With a view to giving our customers better deliveries from now on, we are greatly increasing our stocks of Cap Screws, Set Screws, etc. We would, however, ask our customers to send in their specifications as far ahead of their actual needs as possible so that they may get the best possible service. Send us *all* your orders.

TWIST DRILLS, REAMERS, Etc.

INGERSOLL, ONTARIO

THE CANADIAN BRIDGE CO., Limited WALKERVILLE, ONTARIO

—MANUFACTURERS—

RAILWAY AND HIGHWAY BRIDGES

Locomotive Turn Tables. Roofs, Steel Buildings and Structural Iron
Work of all Descriptions

DOMINION BRIDGE COMPANY, Limited

Head Office and Works: **Montreal, P.Q.**

Branch Offices and Works: **Toronto, Ottawa, and Winnipeg**

ENGINEERS, MANUFACTURERS AND ERECTORS OF STEEL STRUCTURES

CAPACITY 135,000 TONS

Railway and Highway Bridges, Swing and Bascule Spans, Buildings of all Kinds, Hemispherical Bottom and other Tanks, Transmission Poles and Towers, Riveted Pipe, Caissons, Barges, Turntables, Electric and Hand Power Cranes, Hoisting Appliances, Lift Locks, Hydraulic Regulating Gates, etc. Gear Cutting and General Machine Work.

Large Stock of Standard Structural Material at All Works

COTTON & WOOL WASTE

PACKED AT OUR
DOMINION WASTE FACTORY
TORONTO

THE GUARANTEE WITH OUR
Washed Cotton Wipers

All wipers have been hand selected, hard and starchy parts and buttons, etc., removed, sleeves and other closed parts opened and subjected to a thorough washing, rendering absolutely sanitary.

Write us for prices on our brands

SELECT WHITE MIXED COLORED
DARK COLORED

SCYTHES & COMPANY, LIMITED
Manufacturers and Jobbers, Toronto, Montreal

WASHED COTTON WIPERS

Old Tyme Pure Maple Syrup

AND

Maple Butter

SOLD EVERYWHERE



Maples Limited

Manufacturers and Refiners
TORONTO CANADA

The Quaker Oats Company, 34 Hunter Street, Peterboro, propose to erect a \$100,000 addition to local plant. A quantity of machinery will be required.

A. C. Eisenbach, care of Gordon Philip, City Hall, contemplates the erection of an automobile factory, to cost \$50,000.

New Hamburg.

The Dominion Thresher Co., Limited, of this town, has bought out the Hamburg Thresher Company's property, and are now operating, giving employment to a number of men.

North Bay.

One of the new toy companies has taken out a charter under the name of the North Bay Toy Co., Limited, and will manufacture sleighs, swings and wooden toys. The new company will construct a factory this spring.

Ojibway.

It is reported that the United States Steel Corporation will not go forward at once with the construction of its proposed plant at Ojibway, Ont., opposite Detroit, owing to high prices of materials. The corporation has a lay-out for sixteen blast furnaces, and had planned to build four this year.

Orillia.

Machine shop owned by E. Long Manufacturing Company destroyed by fire. Loss, \$20,000.

ESTABLISHED 1875

The Boiler Inspection and Insurance Co. of Canada

Continental Life Building, Toronto

Issues Policies of Insurance after
A CAREFUL INSPECTION OF
THE BOILERS Covering LOSS
OR DAMAGE TO PROPERTY
and LOSS RESULTING FROM
LOSS OF LIFE AND PERSONAL
INJURIES. :: :: :: ::

Policies Guaranteed by THE
HARTFORD STEAM BOILER
INSPECTION AND INSURANCE
COMPANY. :: :: ::

Assets for Security of Policy-
holders, \$4,552,020.43. :: ::

JOHN L. BLAIKIE	-	-	-	President
H. N. ROBERTS	-			Vice-President and Sec'y
GEO. C. ROBB	-	-	-	Chief Engineer
A. E. EDKINS	-	-	-	Ass't Chief Engineer

THE NICHOLS CHEMICAL COMPANY, LIMITED

MANUFACTURING CHEMISTS

HEAD OFFICE: 222 ST. JAMES STREET, MONTREAL

Branch Office—120 Mill Street, Toronto

WORKS: Capelton, Que., Sulphide, Ont., Barnet, B.C. WAREHOUSES: Montreal, Toronto

Sulphuric Acid
Muriatic Acid
Nitric Acid
Hydrofluoric Acid
Mixed Acid

Sulphate Soda
Sulphide Soda
Hypo-Sulphite Soda
Bi-Sulphite Soda
Phosphate Soda

Glauber's Salt
Blue Vitriol
Sulphate Alumina
Papermaker's Alum
Caustic Soda

Bleaching Powder
Tri-Sodium Phosphate
Ammonia
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Agents for Baker & Adamson's Chemically Pure Acids and Chemicals
AGENTS FOR CANADIAN SALT CO.—"WINDSOR" BRAND CAUSTIC SODA & BLEACHING POWDER

DELANY & PETTIT, LIMITED

Joint and Veneer
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Always uniform.

OFFICE:

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TORONTO, ONT.



Special Woodworking
Garnet Paper and
Cloth

WORKS:

105-131 Jefferson Avenue
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NOTICE

The following are the Factory Inspectors
for the Province of Ontario:

JAMES T. BURKE, Chief Inspector, Toronto
W. T. E. BRENNAGH, Port Arthur.
H. A. CLARK, Toronto.
MISS M. CARLYLE, Toronto
W. S. FORSTER, Ottawa
A. W. HOLMES, Toronto
ROBT. HUNGERFORD, Toronto
FRED KELLOND, Hamilton
S. J. MALLION, Stratford
MRS. A. BROWN-REDDICK, Toronto
H. J. TUTT, Toronto

Persons having business with any of the Inspectors should communicate
with them at the Parliament Bldgs., Toronto.

Phone Main 5800 HON. F. G. MacDIARMID,
Minister of Public Works and Highways.



NOTICE

To Manufacturers, Dealers,
and Users of Steam Boilers.

All steam boilers built in, or entering the Province of Ontario, and
boilers exchanged or repaired, are subject to Government Inspec-
tion as prescribed in the Steam Boilers Act, 3 George V., C. 61.

*Before any work of repair or alteration is commenced
on any boiler, notice must be sent to the Department stat-
ing the nature and extent of the repairs or alterations pro-
posed to be made. If the Chief Inspector should consider
such repairs or alterations of an extensive character, the
boiler must be inspected in accordance with the Regula-
tions by an Inspector authorized under the Act.*

All communications should be addressed to the Steam Boiler
Branch, Department of Public Works, Parliament Bldgs., Toronto.
HON. F. G. MACDIARMID, D. M. MEDCALF,
Minister of Public Works. Chief Inspector of Steam Boilers.



NOTICE

TO STATIONARY AND HOISTING ENGINEERS

Everyone operating a STATIONARY steam plant of 50 h.p. or
over in the Province of Ontario must hold a Stationary Engineer's
Certificate from the Board of Stationary and Hoisting Engineers.
Anyone operating such a plant without a Certificate is liable to the
penalties set forth in the Stationary and Hoisting Engineers' Act.

Everyone operating a HOISTING steam plant working at a
pressure of 20 pounds or over irrespective of horse power, and used
for hoisting in structural operations or excavating purposes, in the
Province of Ontario, must hold a Hoisting Engineer's Certificate
from the Board of Stationary and Hoisting Engineers. Anyone
operating such a plant without a Certificate is liable to the
penalties set forth in the Stationary and Hoisting Engineers' Act.

Application forms for obtaining STATIONARY or HOISTING
Engineers' Certificates may be had upon applying to the Chairman.

HON. F. G. MACDIARMID, W. C. McGHIE,
Minister of Public Works and Highways. Chairman of Board.

Established
1849

BRADSTREET'S

Capital and Surplus - - \$1,500,000

Offices Throughout the Civilized World

Executive Offices: Nos. 346 and 348 BROADWAY, N.Y. CITY, U.S.A.

THE BRADSTREET COMPANY gathers information that reflects the financial condition and
the controlling circumstances of every seeker of mercantile credit. Its business may be
defined as of the merchants, by the merchants, for the merchants. In procuring, verifying,
and promulgating information, no effort is spared, and no reasonable expense considered
too great, that the results may justify its claim as an authority on all matters affecting
commercial affairs and mercantile credit. Its offices and connections have been steadily
extended, and it furnishes information concerning mercantile persons throughout the
civilized world.

Subscriptions are based on the service furnished, and are available only by reputable
wholesale, jobbing and manufacturing concerns, and by responsible and worthy financial,
fiduciary, and business corporations. Specific terms may be obtained by addressing the
Company at any of its offices. CORRESPONDENCE INVITED.

Offices in Canada

Edmonton, Alta. Hamilton, Ont. London, Ont.
Halifax, N.S. Ottawa, Ont. Quebec, Que.
Montreal, Que. Toronto, Ont. Vancouver, B.C.
St. John, N.B. Winnipeg, Man. Calgary, Alta. Victoria, B.C.

THOS. C. IRVING, Gen. Man. Western Canada, Toronto

Owen Sound.

Following its incorporation, the new Nut, Bolt and Wire Company is planning extensive alterations to the plant of the Nut and Bolt Company, which they absorbed.

Peterborough.

Since the destruction of their Peterborough mill in December, the output of the Quaker Oats Company has been materially curtailed. As their Saskatoon mills were unable to meet the demand, the company recently purchased the plant of the Sudbury Milling Co. at Sudbury, Ont., having a capacity of 1,000 barrels of flour a day. Following this purchase it was announced that a 300-barrel mill at Neepawa, Man., had been bought. Last week we were informed that

the Quaker Oats Company had added still further to their organization by the purchase of the 400-barrel mill of the Canadian Cereal and Flour Mills Company at London, Ont. In connection with this sale the Quaker Oats Company obtained the rights to manufacture and sell the well-known brand of Tillson's Oats formerly made by the Canadian Cereal Company. No action has as yet been taken with regard to the reopening of the Peterborough plant.

Simcoe.

The Simcoe Litho Company, Robinson Street, have under consideration the rebuilding of a factory recently destroyed by fire.

ECONOMY

Rapid production is dependent on the use of ECONOMICAL TOOLS AND STEEL. It is safer *not* to specify High Speed Steel, but

Demand "Tyr," the Economy Steel

MADE IN CANADA

ARMSTRONG, WHITWORTH OF CANADA LIMITED

Offices, 22 Victoria Square, Montreal

Dominion Bank Building, Toronto
WORKS, LONGUEUIL, P.Q.

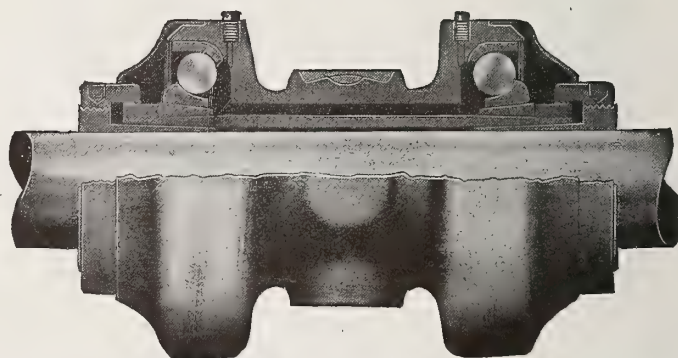
YOU CAN INCREASE YOUR POWER WITHOUT INCREASING THE SIZE OF YOUR POWER PLANT

Your present line shafting is consuming from 15% to 60% of your power.

The Chapman Double Ball Bearing will save this waste and turn it into productive energy.

They will also reduce your oiling and attention to a minimum.

They fit any adjustable hanger and the change can be made with but little delay to you.



In use in over 2,000 Canadian Factories

The Chapman Double Ball Bearing Company OF CANADA LIMITED

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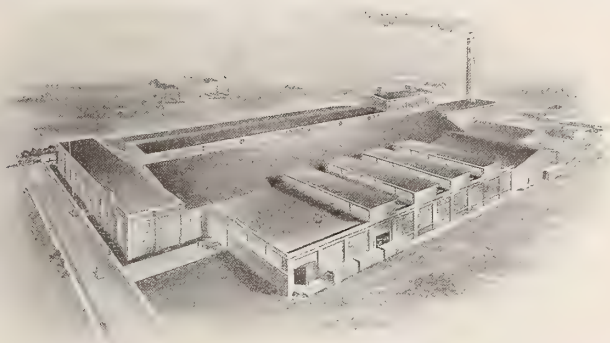
STEEL BARS

ROUNDS, SQUARES, FLATS, ANGLES AND SPECIAL
SECTIONS FOR AGRICULTURAL IMPLEMENTS

Prompt Shipment from Stock

BURLINGTON STEEL CO., Ltd.

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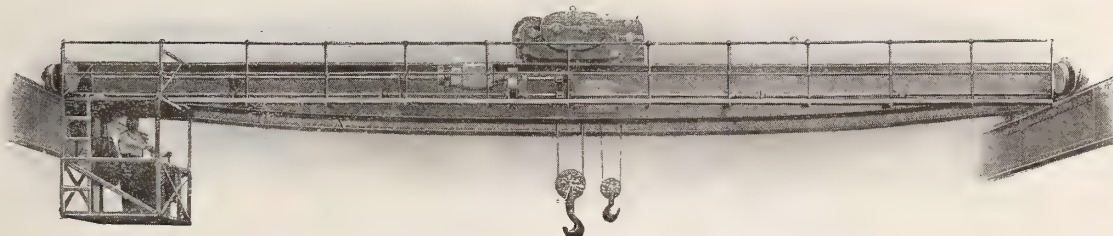
Cold Drawn, Cold Rolled
Turned and Polished Steel

FINISHED KEYS

The Canadian Drawn Steel Co., Ltd.

HAMILTON, CANADA

"CRANES MADE IN CANADA"



ELECTRIC TRAVELING CRANES

HAND POWER TRAVELING CRANES

ELECTRIC HOISTS

AIR HOISTS

FOUNDRY EQUIPMENT

NORTHERN CRANE WORKS, LIMITED - - - WALKERVILLE, ONTARIO

UNION DRAWN STEEL CO., Limited

HAMILTON, ONTARIO

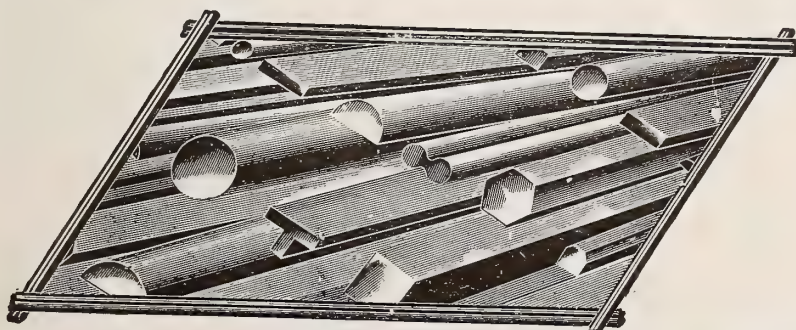
MANUFACTURERS OF

Shafting

Rounds, Flats, Squares
and Hexagons

LARGEST STOCK IN CANADA

Get prices before ordering elsewhere.



The "Famous Five" Files Stand the Wear and Tear of Machine Shop Work

They are made from high carbon steel. The cutting machines are mathematically accurate both as to the number and the depth of the teeth.

The hardening of the file after cutting is done to a fixed standard, which insures its remaining hard and sharp for the longest time when in use.

The "Famous Five" files are standard tools everywhere.

Specify them when ordering.

They are:



Thunder Bay District.

Mr. S. Marks, Nipigon, Ont., has been awarded contract by Provincial Government for cutting pulp wood on Black Sturgeon Limits. According to terms, Mr. Marks will be required to erect a pulp mill, with capacity of 150 tons per day; also paper mill later. Estimated cost is \$1,000,000.

Tillsonburg.

A new industry is promised for this town. It is the Huntley Manufacturing Company, a branch of an establishment in Silver Creek, N.Y. Quite a number of men will be employed in the manufacture of grain-cleaning machinery, canning machinery, peanut and coffee machinery.

Toronto.

The Cudahy Packing Company, Macauley Avenue, head office, Chicago, Ill., are negotiating for site for new plant; will likely locate between West Toronto and Islington.

Work on the \$3,000,000 steel plant at Ashbridge's Bay, Toronto, has been started under the supervision of the Toronto Harbor Commission staff. The railway to carry in supplies has been completed, and bunk houses, storage sheds, etc., are now being erected.

Ground has been broken for the new plant of Aeroplanes, Limited, on Dufferin Street, and the work of construction will be rushed through. It is understood the plant will be ready for operation in two months' time.

The British Forgings Co., Limited, have taken out a permit to put in foundations for an electric plant at the foot of Cherry Street, near the Harbor Commission's ground area, at a cost of \$25,000, for the Imperial Munitions Board.

Work will be started shortly on a \$50,000 5-story brick construction warehouse for the Dominion Envelope Co., 90 Ontario Street. Contracts will be awarded shortly.

Northern Aluminum Co. LIMITED

1305-6 Traders Bank Building . . . Toronto, Ont.

Sheet, Ingot, Rod,
Wire, Tubing,
Rivets, Extruded
Shapes, Bronze
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cated articles.

We solicit
your enquiries
and will be glad
to serve you. Our
experience and know-
ledge of the metal will be
of value to you.

Write Us
NORTHERN ALUMINUM CO., LIMITED

Contract for the erection of a group of seven factory buildings, to cost \$500,000, for the Canadian Aeroplanes, Limited, has been awarded.

Trenton.

The British Chemical Co. have extended their plans and have purchased a large block of land in Patricia Park. Messrs. Fraser, Brace and Co., of Montreal have a contract to erect between thirty and forty buildings on this property for a smokeless powder plant.

Windsor.

There is now being made in Windsor a machine, we believe not heretofore made in Canada, or at least if a similar machine has been made it did not turn out successfully.

Messrs. Hitch Bros. Company of Canada, Limited, are now making in a small way the Hitch Paper-Hanging Machine.

Plans are being prepared for a \$75,000 garage and cigar factory to be erected by A. H. Brener, 362 Dufferin Avenue, London, and 62 Sandwich Street, Windsor.

QUEBEC.

Delson Junction.

The Mack Brick Co., Limited, just incorporated, have acquired land at Delson Junction, P.Q., and propose to erect a brick-making plant. Mr. P. S. McKergow, Secretary of the National Brick Company of Laprairie, Limited, and Mr. L. W. McArthur, General Superintendent of the same company, have resigned their positions, and are interested in the new concern.



We manufacture Babbitt Metal for every purpose.

Our XXX Genuine Arctic

is especially adapted for

Heavy Duty Work

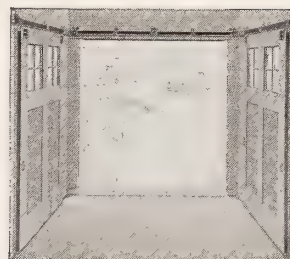
such as Marine and Automobile Engines.

Tallman's Special

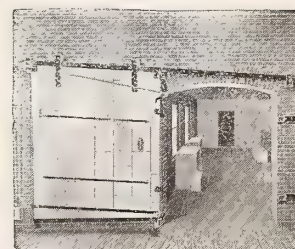
For General Machinery Bearings.

WHAT WE MAKE WE GUARANTEE

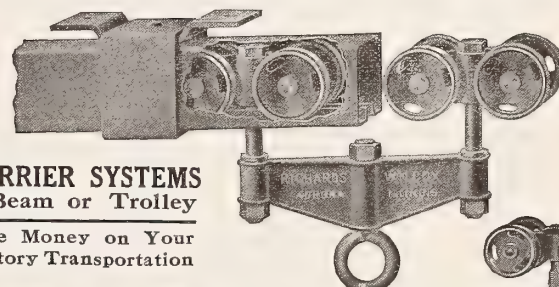
Tallman Brass & Metal Co.
HAMILTON, ONT.



Garage Door Hardware of all kinds for any purpose

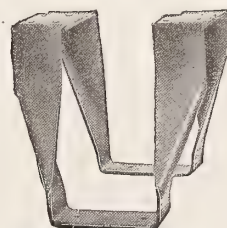


Fire Door Hardware—All Styles with Underwriters' Label



CARRIER SYSTEMS I-Beam or Trolley

Save Money on Your
Factory Transportation



**BULLDOG STEEL
JOIST HANGERS**
They never let go!
Stronger than
malleable

"R-W" HANGERS and Carrier Systems are specified by leading architects and engineers throughout Canada and the United States. Catalogues and estimates will be cheerfully furnished.

Richards-Wilcox
CANADIAN COMPANY, LTD.
LONDON, ONTARIO.



"R-W" Trolleys are best for all sliding doors

IMPERIAL GENUINE BABBITT METAL *The Highest Grade Manufactured*



Made specially for all HIGH SPEED, HEAVY ENGINES and EXTRAORDINARY HARD WORK

Manufactured and guaranteed to give excellent service by
THE CANADA METAL COMPANY, Limited, FRASER AVENUE TORONTO, Hamilton, Montreal
Winnipeg, Vancouver

Made
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Canada



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British
Stock

"GENUINE OAK"
LEATHER BELTING

"D.K."
BALATA BELTING

Guaranteed to Give Satisfaction

D. K. McLAREN LIMITED

TORONTO MONTREAL ST. JOHN, N.B.
847 Beatty Street, VANCOUVER
Engineer's Supply Co., 123 Bannatyne Ave. E., WINNIPEG

Montreal.

Canadian manufacturers will, no doubt, be interested in knowing that the Canadian China Clay Co., Limited, is now operating a mine at St. Remi d'Amherst, Quebec, where they are mining and refining china clay, fire clay, silica sand, etc.

Canadian Vickers, Limited, have awarded contract for the structural steelwork in connection with the large double shipbuilding berth that they are about to build here. Construction will begin at once and will be completed within a few months.

The name of the firm of Heap and Partners, Limited, Montreal, has been changed to Samuel Osborne and Company. A factory has been secured on Seigneurs Street and equipped with machinery for manufacturing high-speed tool steel. Mr. S. C. Buck is the superintendent.

The factory of Jennings and Company, wagon builders, 15 Wellington Street, was destroyed by fire recently. Loss, \$25,000; well covered by insurance.

The Canada Car and Foundry Co. is understood to be figuring at the present time on an order for 44,000 steel cars for the French Government. The cars, costing in the vicinity of \$3,000 each, will involve an outlay of considerably over \$100,000,000.

Plessisville.

Messrs. Laliberte and Boisvert advise us that they are operating a small plant for the production of threshing machines and sawing machines.

633-661
EASTERN
AVENUE



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The Largest Patent Leather Manufacturers
in the British Empire

A. R. CLARKE & CO., LIMITED

MONTREAL

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QUEBEC



Cut of 60-inch "Extra" Double Belt

Made by The J. C. McLaren Belting Co., Limited.

ABSOLUTE SATISFACTION GUARANTEED

The J. C. McLaren Belting Co., Limited

ESTABLISHED 1856

Head Office and Factory
MONTREAL, Que.

Branches:

50 COLBORNE ST., TORONTO
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LEATHER BELTING

Made in Canada

J. L. Goodhue & Co., Limited

DANVILLE, QUEBEC

Manufacturers of
**SUPERIOR QUALITY LEATHER
BELTING AND LACE LEATHER**

QUALITY

Not Price Our Aim

**Canadian Manufacturers SHOULD
USE Canadian Belting**

Winnipeg Agents:
BISSETT & WEBB, Limited
151 Notre Dame Ave. East
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ESTABLISHED 1850

DID YOU EVER NOTICE

that jarring, grinding noise in your machine
shop caused by the metal gears?

Wouldn't you like to stop
that noise? You can do it
by using

**NEW PROCESS GEARS
RAWHIDE PINIONS**

They last indefinitely too

Ask us about it?

R. GARDNER & SON, LIMITED

Nazareth, Brennan and Dalhousie Streets
MONTREAL

St. Hyacinthe.

Tenders are being received for the erection of a two-story mill construction factory for Duclos and Payan.

Sherbrooke.

Work is under way on the clearing away of the debris of the steel plant owned by Mackinnon, Holmes and Company, Drummond Street, recently destroyed by fire. The company plan to rebuild at a cost of \$40,000. Secretary-Treasurer, F. A. Johnston.

Three Rivers.

The St. Maurice Paper Co.'s new paper mill at Three Rivers, with a capacity of 100 tons of newsprint a day, is

now virtually complete, and will start operations soon. Concurrently with its construction, a 60-ton sulphite mill and a 50-ton sulphate mill have also been going up. The entire new construction programme, supplementing the 100-ton mechanical wood pulp now operating, should be completed by about March.

SASKATCHEWAN.**Moose Jaw.**

Dominion Fire Brick and Clay Products, Limited, have decided to double the capacity of their plant.

Another big boost for Quebec industry is indicated by the incorporation of the Quebec Cement Co., Limited, Quebec, with a capital of \$1,250,000.



\$141,017.00 worth of abrasive wheels imported into this country in the last fiscal year, that should have been "MADE IN CANADA."

We can furnish the Canadian made goods of the best natural and artificial abrasives, by the vitrified or silicate process; in the latter, with or without the wire web.

Can be obtained from the following supply houses:

J. R. BAXTER & CO., LTD.
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H. W. PETRIE LTD.
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McDOUGALS LTD.
Ottawa

COWAN HARDWARE CO.
London

WALKERVILLE HDW. CO.
Walkerville

NORTHERN CAN. SUP. CO.
Cobalt

Or direct from the manufacturers,

DOMINION ABRASIVE WHEEL CO., LTD.
NEW TORONTO, ONT. CANADA

**Buy Matches As You Would
Any Other Household Commodity
—With An Eye to Full Value!**

When you buy Eddy's Matches,
you receive a generously-filled
box of SURE, SAFE Lights

ASK FOR

EDDY'S "SILENT PARLOR" MATCHES

CANADIAN PACIFIC

FLORIDA *via* DETROIT *AND* CINCINNATI

*Why not Florida for your Winter Tour?
The Attractions are Unsurpassed*

Beautiful Palm Trees—Warm Sea Bathing—Orange and
Banana Groves—Golf—Tarpon Fishing—
Luxurious Hotels for all Pockets

Two Nights Only from Toronto

**Winter Tourist Tickets
Now on Sale**

Fast train 4.00 p.m. daily from Toronto

via
**Canadian Pacific, making direct
connection at Detroit**

Particulars from Canadian Pacific Ticket Agents or
write W. B. HOWARD, District Passenger Agent,
Toronto

Canada-South Africa Direct Service

Regular monthly sailings from Montreal in Summer and St. John, N.B., in Winter, calling at Cape Town, Algoa Bay (Port Elizabeth), East London, Port Natal (Durban) and Delagoa Bay in the order named.

Sailings 20th of each month.

All steamers fitted with refrigerators for the carriage of perishable freight.

For rates of freight and other information apply to

ELDER DEMPSTER & CO., Limited

133 BOARD OF TRADE BUILDING - - MONTREAL

Toronto Agent: S. J. SHARP, 79 Yonge St., Royal Bank Bldg

THE

New Zealand Shipping Company, Limited

CANADA
TO

Australia and New Zealand

Regular monthly sailings from Montreal in summer and St. John in winter, calling at Adelaide, Melbourne and Sydney (Australia), and Auckland, Wellington, Lyttelton and Dunedin (New Zealand). Sailings 20th of each month.

Through bills of lading issued to all points in Australia, New Zealand, Tasmania and other islands of Oceania.

Marine Insurance effected at rates equal to those given from New York.

For rates and other information apply to

**The New Zealand Shipping Co.
LIMITED**

213 Board of Trade Building, Montreal

New Incorporations

Information about various new and old enterprises, the incorporation of which has been announced in recent issues of the Canadian and Provincial Gazettes.

In order to expand the scope of the business of Mr. David Balcovske, a company has been formed called the Union Abattoir Co., Limited, St. Boniface, Man., with a capital of \$100,000.

The National Piano Co., Limited, has taken out an Ontario charter authorizing the use of \$1,000,000 capital in the manufacture of pianos and other musical instruments. The head office is in Toronto.

A small company called Coats, Limited, has just been formed in Toronto for the manufacture of mantles, garments, uniforms, suits, etc. The company will utilize \$40,000 in carrying on their business.

One result of the recent negotiations in Port Arthur in connection with the establishment of a pulp mill there, is the incorporation of the Port Arthur Pulp and Paper Co., Limited, with a capital of \$2,000,000.

A possible development of recent industrial research experiments into the straw problem is the incorporation of the Saskatchewan Straw-Gas Company, Limited, of Moose Jaw, Sask., with a capital of \$200,000.

A company called Mineral Products, Limited, Madoc, Ontario, has been formed to exploit the well known mineral resources of Hastings County. United States and Canadian engineers are interested. The authorized capital is \$100,000.

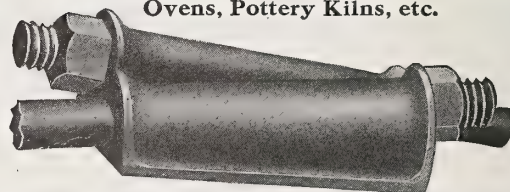
Pembroke is hot on the heels of its rival eastern town Renfrew. The latest advancement is the incorporation of Superior Electrics, Limited, with \$100,000 capital. This company will manufacture electric stoves, heaters and other appliances.

The resources of the Eastern Provinces in respect to mineral earths, etc., used in the manufacture of paints, will come in for further exploitation when the Paint Products Co. of Canada, Limited, Montreal, gets into action with its \$500,000 capital.

The last year or so has been marked by the addition of a number of small companies to the ranks of the brush manufacturing industry. Generally speaking these companies are formed to manufacture some special type of brush. This seems to hold good in the case of the Dominion Toilet Brush Co., Limited, Morrisburg. The capital is \$40,000.

LUGS FOR BANDS

On Silos, Tanks, Water Pipes, Penstocks
Ovens, Pottery Kilns, etc.



Ask
for
Price
List

For round Rods $\frac{3}{8}$ to $1\frac{1}{2}$ inch

Flat Bands 2 to 6 inches wide

Best Malleable Iron—Prompt Shipments.

OTTERVILLE MFG. CO., LIMITED
OTTERVILLE, ONT.

CANADIAN NORTHERN'S YEAR

Of its total revenues—\$35,476,275.06—the freight earnings of the Canadian Northern System for the fiscal year ended June 30th, 1916, were \$26,560,213.12, an increase of \$8,352,412.60, or 45.87 per cent. over those for the preceding twelve months.

This is a clear demonstration of the truth of the statement that, in Canada, the railway is the greatest of all agencies for the development of agriculture and the other great industries that are more or less dependent for their prosperity upon the opening of vast fertile areas to settlement.

These figures are significant because of the clearness with which they show the intimate relation-

ship between the expansion of the Canadian Northern Railway System and the development of the trade of the Dominion.

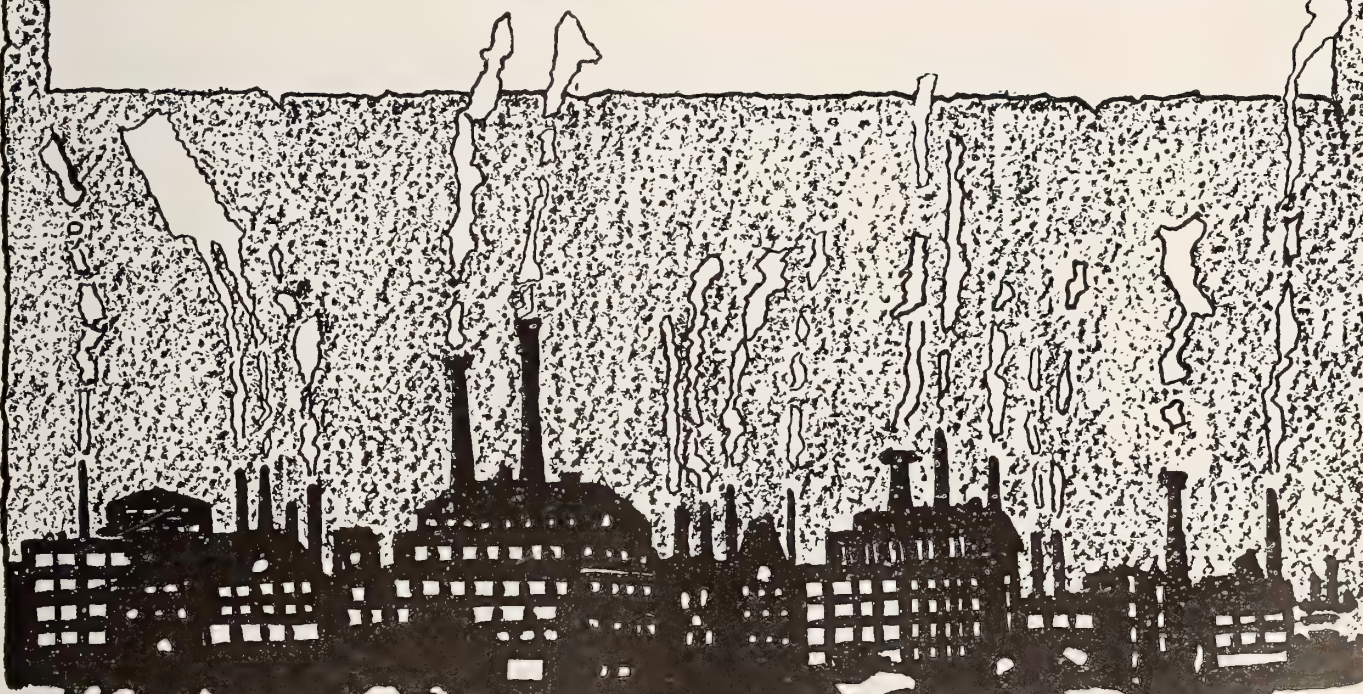
And this, despite the fact that the Company's revenues were adversely affected by a lack of terminals at Vancouver and Montreal, which are in process of construction, and by the lack of a rail connection with the American Railway lines converging at the Niagara frontier.

These developments are for the future—the immediate future—and will enable the Canadian Northern to provide the complete transcontinental service it set out to attain to nearly twenty years ago.



TEST CANADIAN NORTHERN SERVICE

Principal Offices at: Halifax, N.S.; Quebec, Que.; Montreal, Que.; Ottawa, Ont.; Toronto, Ont.; Port Arthur, Ont.; Winnipeg, Man.; Regina, Sask.; Saskatoon, Sask.; Prince Albert, Sask.; Edmonton, Alberta; Calgary, Alberta; Kamloops, B.C.; New Westminster, B.C.; Vancouver, B.C.; Victoria, B.C.



Ship
CANADIAN NORTHERN
all the way

Hear Us For Our Cause!



We want to equip
your plant with

ESTY FIRE SPRINKLERS

and show you how
to reduce insur-
ance costs 50% to
80%.

IT'S A GREAT BIG MONEY SAVER

Write :

H. G. VOGEL CO. (CANADA) LIMITED
169 Duke St. - MONTREAL, P.Q.

WASTE IN FISHERIES.

Waste in Canadian fisheries was the subject of a recent address before the Royal Canadian Institute, Toronto, by Mr. J. B. Fielding, late Director of Fisheries' Research. He pointed out that this waste in the Dominion from the casting away of unsaleable and small fish, destruction of heads and viscera, etc., amounts to nearly 250,000 tons annually. Much, of course, cannot be collected, but considerable quantities can at points of landing, at canneries and curing establishments. Mr. Fielding has made some preliminary experiments which have proved highly satisfactory, and it is hoped the Government will continue this research as one of prime importance at this time.

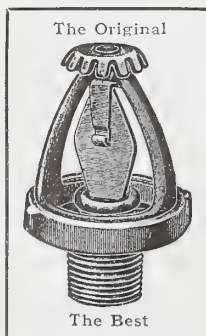
Valuable oil can be extracted in demand by the drug trade, the paint, soap, leather dressing, lubricating oil and other industries, while the solid matter or residue is of value to the farmer in hog raising and for other live stock, and as a concentrated fertilizer. In Europe fish meal is largely used. Mr. Fielding states the protein value is as high as 60 per cent., and fat from 5 to 10 per cent. "Canada should see to it," he remarked, "that we make use of our own raw materials, of which we are so justly proud, and not import finished products made from the same materials in foreign countries."

As an example of waste Mr. Fielding said that out of eighty-eight pounds of salmon required to fill one case of canned fish forty pounds is waste; thus nearly half the weight of salmon caught on the Pacific coast is thrown away. Of the total catch of lobsters for the canneries only one-quarter is put in the can, hence 75 per cent. waste. Of the total catch on our Great Lakes 40 to 45 per cent. is waste.

PURDY, MANSELL LIMITED TORONTO

Cut your insurance in half by having
us instal an

Automatic Fire Sprinkler System



throughout your
Factory, Store or
Warehouse.

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DARLING BROTHERS
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Engineers and Manufacturers
MONTREAL, CANADA

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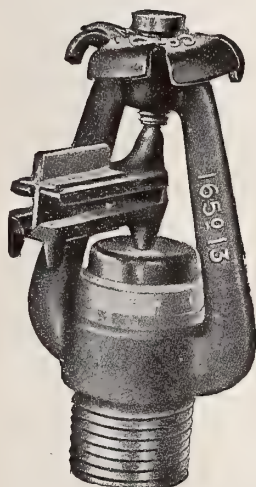


POWER PRESSES DROP AND SCREW

SHEET METAL
STAMPINGS
DIES AND TOOLS

**W. H. BANFIELD & SONS
LIMITED**
370-386 PAPE AVE. TORONTO

WHY NOT ENJOY— THE SECURITY OFFERED



with an installation of

MANUFACTURERS' AUTOMATIC SPRINKLERS ?

Installation pays for itself in reduced insurance rates within a few years

WRITE FOR PARTICULARS

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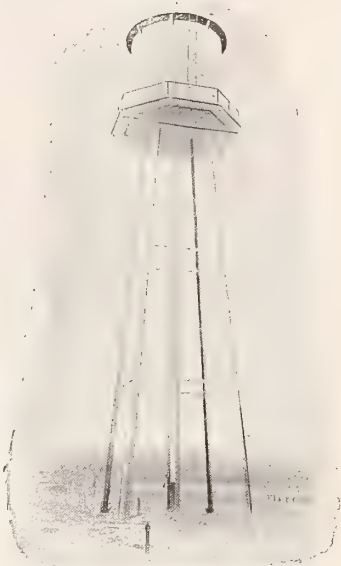
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LADIES' WEAR MANUFACTURING BUSINESS FOR SALE.

A well-organized Ladies' Wear manufacturing business is offered for sale. The stock in this business is estimated at \$40,000, and the plant at \$12,000. The business is well managed and the organization is complete. Full particulars will be given on application. Kindly address letters to Box 341, INDUSTRIAL CANADA, Toronto.

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A well-established business now in operation, with complete equipment for the manufacture of overalls, is offered for sale. The stock on hand is valued at approximately \$75,000, and the plant is valued at \$25,000. Full information will be given on application. Address letters to Box 323, INDUSTRIAL CANADA, Toronto.

WAR SAVINGS CERTIFICATES.

Some of the Features which Commend these Securities to the Favor of the Canadian People.

The new War Savings Certificates which have been created by the Government to encourage thrift and economy, and to give everyone an opportunity to assist in financing our war expenditure, are now on sale at every bank and money order post office in Canada. The \$25 certificate sells for \$21.50, the \$50 for \$43, and the \$100 for \$86.

As an investment these certificates offer many attractive features, chief of which are the absolute security and the excellent interest return. For every \$21.50 lent to the Government now, \$25 will be returned at the end of three years.

There are two other features which are especially interesting to small investors. First, the certificates may be surrendered at any time, if the buyer should need his money; and second, each certificate is registered at Ottawa in the buyer's name, and if lost or stolen, is therefore valueless to anyone else.

But while they are excellent from an investment standpoint, the certificates should appeal strongly to Canadians because they offer to those who must serve at home a splendid opportunity for a most important patriotic service. The person who honestly saves to the extent of his ability and places his savings at the disposal of the Government by purchasing these certificates, may feel that he is having a direct share in feeding, equipping and munitioning our Canadian soldiers, who are so nobly doing their part.

ANOTHER PROFIT-SHARING PLAN.

Cluett, Peabody & Co., Inc., of Troy, N.Y., makers of collars and shirts, whose Canadian office is in Montreal and factory at St. Johns, P.Q., announce that they are preparing a "Profit Sharing Plan," which they have had under consideration for many months, and which will go into effect from Jan. 1st, 1917, and which will apply to all their employees in the different departments, and which will affect about 10,000 employees. It has not yet been decided upon what basis the distribution will be made, but details will be announced on April 10th. There are twenty-five salesrooms in the United States and four in Canada which will be affected by this distribution.

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PARIS : : : CANADA

TIMBER TREATMENT.**Scarcity of Certain Species Demands the Use of Preservative Measures.**

While the preservative treatment of timbers is still in its infancy on this continent, much more progress has been made in the United States, where, in the east, the pinch of partial exhaustion of timber supplies is being felt, than in Canada, where supplies are still relatively large in proportion to the population. In the United States the number of wood-preserving plants has increased in ten years from 39 to over 100. In 1915, at 102 plants, nearly 142,000,000 cubic feet of timber was given preservative treatment. Of this more than 78 per cent. was cross-ties, for railway use.

Preservative treatment of ties makes it possible in the east to utilize so-called inferior species, such as beech, birch

and maple, in place of the now relatively scarce and much more expensive oak and cedar, which were formerly used to a very large extent. In this way better service is secured at a materially lower cost.

The slower developments along this line in Canada are due to the fact that we still have large supplies of coniferous material suitable for ties. For instance, in 1914 more than 43 per cent. of all ties purchased in Canada were jack-pine. Eastern cedar followed next, with 13.7 per cent.; then tamarac, with 7.8 per cent.; Douglas fir, with 7.5 per cent.; and hemlock, with 7.2 per cent. Canadian railways require about 20,000,000 ties per year. The increasing shortage of readily accessible supplies will inevitably mean higher costs, and this in turn will gradually bring about the wider use of preservatives in connection with the cheaper hardwoods, of which birch is the most plentiful in Canada.—C.L.

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BUYERS' GUIDE TO CANADIAN MANUFACTURES

A List of Articles Which Will Enable the Purchaser to Know the Manufacturers of Made-in-Canada Goods. For Rates for Insertion in this Department Write to the Advertising Manager of Industrial Canada, Toronto.

ABRASIVE MATERIALS

- *Canadian Hart Wheels, Ltd., Hamilton, Ont.
- *Dominion Abrasive Wheel Co., New Toronto, Ont.

ACCOUNT BOOKS

- *The Brown Bros., Ltd., Toronto.

ACETYLENE GAS BURNERS

- Economic Acetylene Burner Co., Toronto.

ACIDS

- *The Grasselli Chemical Co., Ltd., Toronto.
- *The Nichols Chemical Co., Ltd., Montreal.

ADVERTISING NOVELTIES

- Lawson & Jones, Ltd., London, Ont.

AERATED BEVERAGES

- Charles Gurd & Co., Ltd., Montreal, Que.
- J. J. McLaughlin, Ltd., Toronto.

AIR COMPRESSORS

- *Canadian Ingersoll-Rand Co., Sherbrooke, P.Q.
- *Jenckes Machine Co., Sherbrooke, P.Q.
- *Smart-Turner Machine Co., Ltd., Hamilton, Ont.

ALCOHOL

- The St. Hyacinthe Distillery Co. Ltd., St. Hyacinthe, Que.
- *Hiram Walker & Sons, Limited, Walkerville, Ont.

ALE

- E. L. Drewry, Winnipeg, Man.

ALUMINUM

- *Northern Aluminum Co., Ltd., 1305 Traders Bank, Toronto.

ALUMINUM CASTINGS

- *Tallman Brass & Metal Co., Hamilton, Ont.

AMMONIA

- Canadian Ammonia Co., Ltd., Toronto.

ANGLE BARS

- *The Steel Company of Canada, Limited, Hamilton, Ont.

ASBESTOS:

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS SHEATHING:

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS SHEET AND PISTON PACKINGS

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS STEAM PIPE AND BOILER COVERINGS

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS TEXTILES:

- *Eureka Mineral Wool & Asbestos Co., Toronto.

AUTOMOBILE ACCESSORIES,

- *Northern Electric Co., Limited, Montreal.
- *Tallman Brass & Metal Co., Hamilton, Ont.

AUTOMOBILE PARTS

- *Dominion Forge & Stamping Co., Walkerville, Ont.

AWNING CORD (cotton)

- Hamilton Cotton Co., Hamilton, Ont.

AXLES

- Canada Forge Co., Ltd., Welland, Ont.
- Guelph Spring & Axle Co., Ltd., Guelph, Ont.

AXLES, carriage and automobile

- Guelph Spring & Axle Co., Ltd., Guelph, Ont.

BABBITT METAL

- Alonzo W. Spooner, Limited, Port Hope, Ont.
- *The Canada Metal Co., Toronto.
- *Tallman Brass & Metal Co., Hamilton, Ont.

BACON

- E. W. Fearman Co., Ltd., Hamilton, Ont.

BAGS

- *Scythes & Co., Ltd., Toronto.

BAGS, Cotton

- The Canadian Bag Co., Ltd., Montreal, Que.

BAGS, jute

- The Canadian Bag Co., Ltd., Montreal, Que.
- *Scythes & Co., Ltd., Toronto.

BAGS, travelling

- J. Eveleigh & Co., Ltd., Montreal, Que.
- Lamontagne, Ltd., Montreal, Que.
- The M. Langmuir Mfg. Co., of Toronto, Ltd., Toronto.

BAKING JAPAN

- *Berry Bros., Ltd., Winnipeg, Man.

BAND RESAWS:

- *P. B. Yates Machine Co., Ltd., Hamilton, Ont.

BANK AND OFFICE RAILINGS

- *The Geo. B. Meadows, Toronto, Wire, Iron & Brass Works Co., Ltd., Toronto.
- *Canada Wire and Iron Works, Hamilton, Ont.

BANK FITTINGS

- The Canadian Office & School Furniture Co., Ltd., Preston, Ont.

BANK RAILINGS and CAGES

- *Canada Wire and Iron Goods Co., Hamilton, Ont.
- *Dennis Wire & Iron Works Co., London.

BANK SIGNS AND FITTINGS

- *Tallman Brass & Metal Co., Hamilton, Ont.

BARRELS, steel, and containers

- *Smart-Turner Machine Co., Ltd., Hamilton, Ont.

BARBS, iron

- London Rolling Mill Co., Limited, London, Ont.

BARBS, steel

- London Rolling Mill Co., Limited, London, Ont.

BASEBALL GOODS

- A. J. Reach Co., Brantford, Ont.

BATHS, enamelled

- Amherst Foundry Co., Ltd., Amherst, N.S.

BATTERIES, dry

- The Canadian National Carbon Co., Ltd., Toronto.
- Canadian Carbon Company, Ltd., Toronto.

BEARINGS

- *The Chapman Double Ball Bearing Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BEARINGS, bronze

- *Tallman Brass & Metal Co., Hamilton, Ont.

BEARINGS, pillow block and upright

- *Dodge Mfg. Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BEARINGS

- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BEDS, camp folding

- *Otterville Mfg. Co., Ltd., Otterville, Ont.

BEEF

- E. W. Fearman Co., Ltd., Hamilton, Ont.

BEER

- E. L. Drewry, Winnipeg, Man.

BELTING, chain conveyors

- *Canadian Link Belt Co., Toronto.

BELTING, chains

- *Dodge Mfg. Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BELTING, Elevator

- *Canadian Consolidated Rubber Co., Ltd., Montreal, Que.

BELTING, leather

- The Beardmore Belting Co., Ltd., Toronto.

- *J. L. Goodhue & Co., Danville, P.Q.

- *Sadler & Howarth, Montreal.

- *The D. K. McLaren Belting Co., Ltd., Montreal.

- *The J. C. McLaren Belting Co., Ltd., Montreal.

BELTING, rubber

- *Canadian Consolidated Rubber Co., Ltd., Montreal, Que.
- *Gutta Percha & Rubber, Limited, Toronto.

BENT GOODS

- The Crown Lumber Co., Woodstock, Ont.

BICYCLES AND ACCESSORIES

- *Canada Cycle and Motor Co., Ltd., Toronto.

BISCUITS

- The Montreal Biscuit Co., Montreal, Que.

BLACK SHEETS

- *A. C. Leslie & Co., Montreal.

BLANKETS

- Slingsby Mfg. Co., Ltd., Brantford, Ont.

- J. Walsham & Son, Ltd., Bolton, Ont.

BLANKETS, horse

- Slingsby Mfg. Co., Ltd., Brantford, Ont.

- J. Walsham & Son, Limited, Bolton, Ont.

BLASTING ACCESSORIES

- Canadian Explosives, Ltd., Montreal, Que.

BLEACHING POWDER

- Canadian Salt Co., Ltd., Windsor, Ont.

BLOWERS

- *Sheldons, Ltd., Galt, Ont.

BOARDS, wood, binder, fibre specialties

- *Beveridge Paper Co., Limited, Montreal.

BOATS OF ALL KINDS

- Peterboro Canoe Co., Ltd., Peterboro, Ont.

BOILER COMPOUND and OILS

- Electric Boiler Compound Co., Ltd., Guelph, Ont.

BOILER PRESERVATIVES

- *Beveridge Paper Co., Limited, Montreal.

BOILERS

- *M. Beatty & Sons, Ltd., Welland, Ont.

- *Darling Bros., Montreal.

- *Goldie & McCulloch Co., Limited, Galt, Ont.

- John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.

- *Polson Iron Works, Ltd., Toronto.

- J. & R. Weir, Montreal, Que.

- Taylor-Forbes Co., Ltd., Guelph, Ont.

- *Jenckes Machine Co., Sherbrooke, Que.

- *The Watrous Engine Works Co., Ltd., Brantford.

BOILERS, hot water or steam.

- Steel & Radiation, Ltd., Toronto.

- Warden King, Ltd., Montreal, Que.

BOILERS, steam.

- *Jenckes Machine Co., Sherbrooke, Que.

- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

- Steel and Radiation Ltd., Toronto.

- Warden King, Ltd., Montreal, Que.

- *The Watrous Engine Works Co., Ltd., Brantford, Ont.

BOILERS, steam and brass work

- *The Watrous Engine Works Co., Ltd., Brantford, Ont.

BOILER STANDS

- Anthes Foundry Ltd., Toronto.

BOLSTERS

- *Canadian Car & Foundry Co., Ltd., Montreal, Que.

BOLTS

- *The National Acme Mfg Co., Montreal, Que.

BOLTS AND NUTS

- *The Canadian Tube & Iron Co., Ltd., Montreal, Que.

- *The Steel Company of Canada, Limited, Hamilton, Ont.

- Starr Mfg. Co., Ltd., Dartmouth, N.S.

BOOKBINDERS

- R. G. McLean, Toronto.

- *The Brown Bros., Ltd., Toronto.

BOOKCASES

- *Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

BOOKCASES, sectional (Gunn)

- The George McLagan Furniture Co., Ltd., Stratford, Ont.

BOOKLETS

- Stone Limited, Toronto.

- R. G. McLean, Toronto.

BOOKS, blank

- *The Brown Bros., Ltd., Toronto.

BOOTS AND SHOES

- Ames-Holden-McCreedy, Ltd., Montreal, Que.

- J. Leckie Co., Ltd.

- The John Ritchie Co., Ltd., Quebec, Que.

BOXES, cellular board:

- *The Thompson & Norris Co. of Canada, Ltd., Niagara Falls.

BOXES, rattle and soap

- The Arlington Co. of Canada, Ltd., Toronto.

BOXES, steel shop

- *Steel Trough and Machine Co., Ltd., Tweed, Ont.

BOXES AND SHOOKS, wooden

- The C. Beck Mfg. Co., Ltd., Penetanguishene, Ont.

BOXES, wooden

- G. & J. Esplen, Montreal, Que.

- Barchard & Co., Ltd., Toronto.

BRADS AND TRIMMINGS

- The Moulton Mfg. Co., Limited, Montreal.

BRAKE SHOES

- *Canadian Hart Wheels, Limited, Hamilton, Ont.

BRANDS, burning

- Pritchard, Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

BRASS BOLTS AND NUTS

- *Tallman Brass & Metal Co., Hamilton, Ont.

- *Tallman Brass & Metal Co., Hamilton, Ont.

- *The Booth-Coulter Copper & Brass Co., Ltd., Toronto.

- *Tallman Brass & Metal Co., Hamilton, Ont.



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BRASS GOODS

*The Booth-Coulter Copper & Brass Co., Ltd., Toronto.
 *Mueller Mfg. Co., Sarnia.
 The Garth Co., Montreal, Que.
 The James Morrison Brass Mfg. Co., Ltd., Toronto.
 *The Kerr Engine Co., Ltd., Walkerville, Ont.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS PLATES

Geo. Booth & Son., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS RODS, SHEETS AND PLATES

*Brown's Copper and Brass Rolling Mills, Ltd., New Toronto.

BRASS SIGNS AND MEMORIALS

*Tallman Brass & Metal Co., Hamilton, Ont.

BRASS TUBING, seamless

Canadian Seamless Wire Co., Ltd., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS WIRE

Canadian Seamless Wire Co., Ltd., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS WORK, church

Pritchard, Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

BRASS WORK, special

Bawden Machine Co., Ltd., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.
 *Booth-Coulter Copper & Brass Co., Ltd., Toronto.
 *The Watrous Engine Works Co., Ltd., Brantford, Ont.

BRICK

National Brick Co. of Laprairie, Laprairie, P.Q.
 Port Credit Brick Co., Port Credit, Ont.

BRICK, enamel

National Brick Co. of Laprairie, Laprairie, P.Q.

BRICK, pressed

National Brick Co. of Laprairie, Laprairie, P.Q.

BRICK, rubbing

*Canadian Hart Wheels, Limited, Hamilton, Ont.

BRICK, sewer

National Brick Co. of Laprairie, Laprairie, P.Q.

BRIDGES, Railway and Highway

*Dominion Bridge Co., Montreal.
 *Hamilton Bridge Works Co., Ltd., Walkerville, Ont.
 The Canadian Bridge Co., Ltd., Hamilton, Ont.
 *The Structural Steel Co., Limited, Montreal, Que.

BROOMS

Simms, T. S., & Co., Limited, St. John, N.B.
 Stevens-Hepner Co., Limited, Port Elgin, Ont.

BRUSHES

Simms, T. S., & Co., Limited, St. John, N.B.
 Stevens-Hepner Co., Limited, Port Elgin, Ont.

BRUSHES, carbon

Canadian National Carbon Co., Ltd., Toronto.

BUCKET TANKS

*The General Fire Equipment Co., Limited, Toronto, Ont.

BUCKLES, shoe and coat

Parmenter & Bulloch Co., Limited, Gananoque, Ont.

BUILDING BLOCKS, vitrified, salt glazed

Standard Clay Products, Ltd., St. Johns, Que.

BUILDING FELT and PAPER

*Eureka Mineral Wool & Asbestos Co., Toronto.
 *Paterson Manufacturing Company, Toronto and Montreal.

BUILDERS, ship

*Polson Iron Works, Limited, Toronto.
 J. & R. Weir, Montreal, Que.

BURLAPS

The Canadian Bag Co., Limited, Montreal, Que.
 *Scythes & Co., Ltd., Toronto.

BURLAPS, decorative

Dominion Oil Cloth Co., Limited, Montreal, Que.

CABLE, Copper and galvanized

*The Steel Co. of Canada, Ltd., Hamilton, Ont.

CABLES, transmission and tele-phones

*Eugene F. Phillips Electrical Works, Ltd., Montreal, Que.

CABLES, Transmission and Cable

*Northern Electric Co., Limited, Montreal, Que.

CABLES, wire

The Dominion Wire Rope Co., Ltd., Montreal, Que.
 *The B. Greening Wire Co., Ltd., Hamilton, Ont.

CALENDARS, ADVERTISING NOVELTIES, etc.

Rolph & Clark, Limited, Toronto.
 Lawson & Jones, Limited, London, Ont.
 Stone Limited, Toronto.

CAMERAS

Canadian Kodak Co., Limited, Toronto.

CAMPERS' OUTFITTERS

Slingsby Mfg. Co., Ltd., Brantford, Ont.

CANOEES

Peterboro Canoe Co., Ltd., Peterboro, Ont.

CANS, baking powder, etc.

American Can Co., Montreal and Hamilton.
 A. R. Whittall, Montreal, Que.

CANS, fruit

American Can Co., Montreal and Hamilton.
 A. R. Whittall, Montreal, Que.

CANS, iron, lead and putty

A. R. Whittall, Montreal, Que.

CANS, ROVING, ETC., fibre

*Beveridge Paper Co., Limited, Montreal.

CANS, tin

A. R. Whittall, Montreal, Que.
 American Can Co., Montreal and Hamilton.

CANVAS

*Scythes & Co., Ltd., Toronto.

CAPS, cloth

John W. Peck & Co., Ltd., Montreal, Que.

CARBIDE

*Canada Carbide Co., Ltd., Montreal, Que.
 *Union Carbide Co. of Canada, Ltd. Works, Welland, Ont. Head Office, Toronto.

CARBON BRUSHES

Canadian Carbon Co., Limited, Toronto.

CARBON PRODUCTS

Canadian Carbon Co., Limited, Toronto.

CARBONS, arc light

Canadian Carbon Co., Limited, Toronto.
 The Canadian National Carbon Co., Ltd.

CARBONS, flame

Canadian Carbon Co., Limited, Toronto.

CARBONIC ACID GAS

Canadian Carbonate Co., Montreal.

CARD RECORD SYSTEMS

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

CARPETS AND RUGS

Toronto Carpet Mfg. Co., Limited, Toronto.

CARPETS AND RUGS, Axminster and ingrain

Toronto Carpet Mfg. Co., Limited, Toronto.

CARPETS AND RUGS, Brussels and Wilton

Toronto Carpet Mfg. Co., Limited, Toronto.

CARPET YARNS, worsted and wool

Toronto Carpet Mfg. Co., Limited, Toronto.

CARRIAGES, baby, etc.

Canada Furniture Manufacturers, Ltd., Woodstock, Ont.

CARRIERS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

CARRIERS, box and barrel

*Canadian Mathews Gravity Carrier Co., Limited, Toronto.

CARRIERS, brick

*Canadian Mathews Gravity Carrier Co., Limited, Toronto.

*Richards-Wilcox Canadian Co., Ltd., London, Ont.

CARS

*Canadian Car & Foundry Co., Ltd., Montreal, Que.
 *National Steel Car Co., Limited, Hamilton, Ont.

CARS, industrial

*Sheldons, Ltd., Galt.

CARTONS, lithographed

Harris Lithographing Co., Toronto.

CASTINGS

*Tallman Brass & Metal Co., Hamilton, Ont.

CASTINGS, aluminum

*Booth-Coulter Copper & Brass Co., Limited, Toronto.

CASTINGS, brass

*Tallman Brass & Metal Co., Hamilton, Ont.

*Booth-Coulter Copper & Brass Co., Limited, Toronto.

CASTINGS, brass and bronze

*Tallman Brass & Metal Co., Hamilton, Ont.

CASTINGS, grey iron

*Dodge Mfg. Co., Toronto.

*Canadian Car & Foundry Co., Ltd., Montreal, Que.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

*Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.

John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.

CASTINGS, malleable iron

*Galt Malleable Iron Co., Ltd., Galt, Ont.

*Pratt & Letchworth Co., Brantford, Ont.

CASTINGS, steel

*Canadian Steel Foundries, Ltd., Montreal, Que.

*Dominion Steel Foundry Co., Ltd., Hamilton, Ont.

*Hull Iron and Steel Foundry, Ltd., Hull, P.Q.

*Joliette Steel Co., Ltd., Montreal.

*Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.

CATALOGUE MAKERS

Grip, Ltd., Toronto.
 R. G. McLean, Toronto.

CAUSTIC SODA

Canadian Salt Co., Ltd., Windsor, Ont.

CELLBOARD

Adams Cellboard Co., Toronto, Ont.

CEMENT GUNS

Steel and Radiation, Ltd., Toronto.

CHAIN, silent drive

*Canadian Link Belt Co., Toronto.

CHAIRS

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

CHAIRS, assembly hall

Stratford Mfg. Co., Ltd., Stratford, Ont.

CHAIRS, folding

Stratford Mfg. Co., Ltd., Stratford, Ont.

Imperial Rattan Co., Ltd., Stratford, Ont.

CHAIR SEATS, fibre

*Beveridge Paper Co., Limited, Montreal.

CHEMICALS

*Cosmos Chemical Co., Port Hope.
 *The Grasselli Chemical Co., Ltd., Toronto.
 *The Nichols Chemical Co., Ltd., Montreal, Que.

CHEMICAL LABORATORY

APPARATUS
 The Geo. M. Hendry Co., Limited, Toronto.

CHICLETS AND CHEWING GUM

Canadian Chewing Gum Co., Ltd., Toronto.

CIGARS

Ed. Youngheart & Co., Limited, Montreal, Que.

CIGARETTES AND TOBACCO

Philip Morris & Co., Limited, Montreal, Que.

CIRCULAR CUTTERS, solid steel

The Peter Hay Knife Co., Limited, Galt, Ont.

CLAM SHELL BUCKETS

*M. Beatty & Sons, Ltd., Welland, Ont.

CLOCKS, TIME

*International Time Recording Co. of Canada, Ltd., Toronto.

CLOCKS, WATCHMEN'S

*The General Fire Equipment Co., Limited, Toronto.

CLOSET SEATS

*Goderich Organ Co., Goderich, Ont.

CLOTHING

John W. Peck & Co., Ltd., Montreal, Que.

Mackenzie & Co., Ottawa, Ont.

CLOTHING, leather and sheepskin lined coats

*A. R. Clarke & Co., Ltd., Toronto.

CLOTHING, Mackinaw

The Carss Mackinaw Clothing Co., Ltd., Orillia, Ont.

CLOTHES LINES, cotton

Hamilton Cotton Co., Hamilton, Ont.

CLUTCHES

*Dodge Mfg. Co., Ltd., Toronto.

CLUTCHES, conveyors

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

COAL

*Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N.S.

Standard Fuel Co., Toronto.

COBALT OXIDE

The Coniagas Reduction Co., Ltd., St. Catharines, Ont.

COCOA AND CHOCOLATE PREPARATIONS

Walter Baker & Co., of Canada, Ltd., Montreal, Que.

COFFEE

S. H. Ewing & Sons, Montreal, Que.

COLD DRAWN SHAPES, flats, squares and hexagons

*The Canadian Drawn Steel Co., Ltd., Hamilton, Ont.

*Union Drawn Steel Co., Limited, Hamilton, Ont.

COLD STORAGE DOORS

John Hillock & Co., Ltd., Toronto.

COLLAR BUTTONS

The Arlington Co. of Canada, Ltd., Toronto.

COLLARS

The Standard Shirt Co., Limited, Montreal, Que.

COLLARS, coated linen

Parsons & Parsons Canadian Co., Hamilton, Ont.

COLORS

Brandram-Henderson, Limited, Montreal, Que.

A. Ramsay & Son Co., Montreal, Que.

COMBS, fine dressing and name

The Arlington Co. of Canada, Ltd., Toronto.

COMMERCIAL STATIONERS

Rolph & Clark, Ltd., Toronto.

COMMERCIAL STATIONERY

*Brown Bros., Ltd., Toronto.

CONCENTRATORS

*Jenckes Machine Co., Sherbrooke, Que.

CONCRETE COATINGS, PAINTS, ETC.

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.
 The Imperial Varnish & Color Co., Limited, Toronto.

CONDUITS, fibre tubing

*Beveridge Paper Co., Limited, Montreal.

CONDUITS FOR INTERIOR

WIRING
 *Conduits Company, Ltd., Toronto.
CONFECTIONERY
 Ganong Bros., Ltd., St. Stephens, N.B.
 Moirs, Limited, Halifax, N.S.
 The Montreal Biscuit Co., Montreal, Que.

CONTAINER BOARD—strong container
 Bathurst Lumber Co., Ltd., Bathurst, N.B.

CONTRACTORS' PLANT

*M. Beatty & Sons, Ltd., Welland, Ont.

CONVEYORS

*Canadian Mathews Gravity Carrier Co., Toronto.
 *Dodge Mfg. Co., Ltd., Toronto.
 *Jenckes Machine Co., Sherbrooke, Que.

COPPER

*Eugene F. Phillips, Electrical Works, Limited, Montreal.
 *Booth-Coulter Copper & Brass Co., Limited, Toronto.

COPPER SHEETS AND PLATES

*Booth-Coulter Copper & Brass Co., Limited, Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.

COPPERSMITHS

*Booth-Coulter Copper & Brass Co., Limited, Toronto.

COPPER TUBING, seamless

*Canadian Seamless Wire Co., Ltd., Toronto.
 *Booth-Coulter Copper & Brass Co., Limited, Toronto.

COPPER WIRE

*Canadian Seamless Wire Co., Ltd., Toronto.

CORKS

S. H. Ewing & Sons, Montreal, Que.

CORK CARPET

Dominion Oil Cloth Co., Ltd., Montreal, Que.

CORRUGATED PAPER BOXES

Adams Cellboard Co., Toronto.
 *Hinde & Dauch Paper Co., Toronto.
 *Martin Corrugated Paper & Box Co., Limited, Toronto.
 *The Thompson & Norris Co. of Canada, Ltd., Niagara Falls, Ont.

CORSETS

Dominion Corset Co., Quebec, Que.

COTTONS

*Dominion Textile Co., Limited, Montreal, Que.
 *Montreal Cottons, Ltd., Valleyfield, P.Q.

COTTONADES

Hamilton Cotton Co., Hamilton, Ont.

COUPLERS

*Canadian Steel Foundries, Ltd., Welland, Ont.

CRANES

*Northern Crane Works, Walkerville, Ont.

CRANES, locomotive

*Canadian Link Belt Co., Toronto.

COUPLINGS

*Dodge Mfg. Co., Ltd., Toronto.

CRANKSHAFTS

Canada Forge Co., Ltd., Welland, Ont.

CREAM CHEESE, Ingersoll

The Ingersoll Packing Co., Limited, Ingersoll, Ont.

CREAM SEPARATORS AND MILK CLARIFIERS

De Laval Dairy Supply Co., Peterboro, Ont.

CREAMERY AND CHEESE FACTORY MACHINERY AND SUPPLIES

De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

CREOSOTED MATERIALS

*Paterson Mfg. Co., Toronto and Montreal.

CRUSHED STONE

The Hagersville Contracting Co., Limited, Hagersville, Ont.

CRUSHING ROLLS

*Jenckes Machine Co., Sherbrooke, Que.

CUPOLAS

*Sheldons, Ltd., Galt, Ont.

CUPS, presentation

Standard Silver Co., Toronto.

CUPS, grease and oil

*The Canadian Winkley Co., Ltd., Windsor, Ont.

CURLED HAIR

*Delany and Pettit, Ltd., Toronto.

CURTAINS, chenille

Hamilton Cotton Co., Hamilton, Ont.

CUTLERY

Standard Silver Co., Toronto.

CUTTERS, (Machine)

*Pratt & Whitney Co., Dundas.

DENIMS

Hamilton Cotton Co., Hamilton, Ont.

DERAILS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

DESIGNERS

Ontario Engraving Co., Hamilton, Ont.

DESIGNERS and PRINTERS OF BOOKLETS, ETC.

Grip, Ltd., Toronto.

DESKS

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

DINING ROOM SUITES

The George McLagan Furniture Co., Limited, Stratford, Ont.

DIES

*Butterfield & Co., Rock Island, P.Q.

*Pratt & Whitney Co., Dundas.

DISINFECTING APPARATUS

Spramotor Co., London, Ont.

DOOR HANGERS

*Richards Wilcox Canadian Co., Ltd., London, Ont.

DRAPERY AND UPHOLSTERY GOODS

Daly & Morin, Montreal, Que.

DREDGES

*M. Beatty & Sons, Limited, Welland, Ont.

DRESSING, belt

Sadler & Haworth, Montreal, Que.

DRESS AND CLOAK TRIMMINGS

J. Henry Peters Co., 1 Mincing St., Toronto.

DRILLS

*John Morrow Screw & Nut Co., Limited, Ingersoll, Ont.

*Pratt & Whitney Co., Dundas.

DRILLS, rock

*Canadian Ingersoll Rand Co., Sherbrooke, Que.

*Jenckes Machine Co., Sherbrooke, Que.

DRIFT BOLTS OR SPIKES

London Rolling Mill Co., Limited, London, Ont.

DROP FORGINGS

*Canadian Billings & Spencer, Ltd., Welland, Ont.

DRUMS, steel, and containers

*Smart-Turner Machine Co., Ltd., Hamilton, Ont.

DRY CELLS, electric

Canadian Carbon Co., Limited, Toronto.

DRY COLORS

P. D. Dods & Co., Ltd., Montreal, Que.

The Imperial Varnish & Color Co., Limited, Toronto.

R. C. Jamieson & Co., Ltd., Montreal, Que.

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

DUMB WAITERS

Turnbull Elevator Mfg. Co., Toronto.

DURABLE WIRE ROPE

The Dominion Wire Rope Co., Ltd., Montreal, Que.

DYNAMITE

Canadian Explosives, Limited, Montreal, Que.

DYNAMOS

Consolidated Electric Co., Limited, Toronto.

*Jones & Moore Electric Co., Ltd., Toronto.

*The Canadian Crocker-Wheeler Co., Limited, St. Catharines, Ont.

DYNAMOS, plating

*Jones & Moore Electric Co., Ltd., Toronto.

EIDERDOWN

Galt Knitting Co., Ltd., Galt.

ELECTRIC APPLIANCES

*Canadian Crocker-Wheeler Co., Limited, St. Catharines, Ont.

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

ELECTRIC APPLIANCES, fibre, all purposes
 *Beveridge Paper Co., Limited, Montreal.

ELECTRICAL COMPOUNDS

Standard Paint Co. of Canada, Ltd., Montreal, Que.

ELECTRICAL AND GAS FIXTURES

The Garth Co., Montreal, Que.

The James Morrison Brass Mfg. Co., Limited, Toronto.

*Tallman Brass and Metal Co., Hamilton, Ont.

ELECTRIC LAMPS

Packard Electric Co., Limited, Toronto.

ELECTRIC PLATE WARE

Roden Bros., Ltd., Toronto.

ELECTRIC BATTERIES

Canadian Carbon Co., Limited, Toronto.

ELECTROTYPING

Central Press Agency, Toronto.

ELECTRICAL SUPPLIES

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

*Jones & Moore Electric Co., Ltd., Toronto.

*Northern Electric Co., Limited, Montreal, Que.

ELECTRO-SILVER PLATED WARE

Standard Silver Co., Toronto.

ELEVATING MACHINERY

*Canadian Mathews Gravity Carrier Co., Toronto.

ELEVATORS

*Jenckes Machine Co., Sherbrooke, Que.

Turnbull Elevator Manufacturing Company, Toronto.

*The Watrous Engine Works Co., Ltd., Brantford, Ont.

*Northern Crane Works, Limited, Walkerville, Ont.

ELEVATORS FOR ALL PURPOSES

*The Watrous Engine Works Co., Limited, Brantford, Ont.

ELEVATOR GATES AND DOORS

Turnbull Elevator Mfg. Co., Ltd., Toronto.

ELEVATOR GUARDS

*The Geo. B. Meadows, Toronto

Iron and Brass Goods Works Co., Limited, Toronto.

*Canada Wire and Iron Works, Hamilton, Ont.

ELEVATORS, hydraulic and electric
 John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.

EMERY DRESSERS AND STANDS
 *Canadian Hart Wheels, Limited, Hamilton, Ont.

EMERY GRINDERS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

EMERY WHEELS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

EMERY WHEEL GUARDS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

ENAMELS

R. C. Jamieson & Co., Limited, Montreal, Que.

ENAMEL MANUFACTURERS AND DECORATORS
 Standard Paint & Varnish Co., Ltd., Windsor, Ont.

ENAMEL AND TIN WARE

McClary Mfg. Co., London, Ont.

ENGINES

*E. Leonard & Sons, London, Ont.

*Goldie & McCulloch Co., Limited, Galt, Ont.

J. & R. Weir, Montreal, Que.

*Jenckes Machine Co., Sherbrooke, Ont.

*Polson Iron Works, Limited, Toronto.

*Sheldons, Ltd., Galt, Ont.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

ENGINES, gas and gasoline

*Goold-Shapley-Muir Co., Limited, Brantford, Ont.

*Massey-Harris Co., Ltd., Toronto.

ENGINES, gasoline, tractor, plowing and threshing
 *Sawyer-Massey Co., Ltd., Hamilton, Ont.

ENGINES, hoisting

*M. Beatty & Sons, Welland, Ont.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

ENGINES, steam plowing and threshing

Sawyer-Massey Co., Limited, Hamilton, Ont.

ENGRAVERS

Grip, Limited, Toronto.

Ontario Engraving Co., Hamilton, Ont.

Rolph & Clark, Limited, Toronto

Stone, Limited, Toronto.

ENGRAVERS, half-tone
 Grip, Limited, Toronto.

Ontario Engraving Co., Hamilton, Ont.

ENGRAVERS, wood
 Ontario Engraving Co., Hamilton, Ont.

ENGRAVERS AND PRINTERS
 steel plate
 American Bank Note Co., Ottawa, Ont.

ENGRAVERS AND PRINTERS
 banknote
 American Bank Note Co., Ottawa, Ont.

ENGRAVING
 *J. L. Jones Engraving Company, Toronto.

ENGRAVING, copper and steel plate
 Pritchard-Andrews Co. of Ottawa, Limited, Ottawa, Ont.

ENSILAGE AND STRAW CUTTERS
 J. Fleury's Sons, Aurora, Ont.

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

ENVELOPES
 Barber-Ellis Co., Ltd., Toronto.

Canada Envelope Co., Montreal, Que.

EXCELSIOR
 *Delany & Pettit, Ltd., Toronto.

EXCELSIOR PADS
 *Delany & Pettit, Ltd., Toronto.

Parmenter & Bulloch Co., Limited, Gananoque, Ont.

EXPERTS IN PATENT CAUSES
 Ridout & Maybee, Toronto.

EXPLOSIVES, high
 Canadian Explosives Ltd., Montreal, Que.

FACE PLATE JAWS
 Ker & Goodwin, Brantford, Ont.

FACTORY SUPPLIES, cheese and creamery
 De Laval Dairy Supply Co., Ltd., Montreal, Que.

J. Henry Peters Co., 1 Mincing St., Toronto.

FANS
 *Sheldons, Limited, Galt, Ont.

FASTENERS, belt
 *Sadler & Haworth, Montreal, Que.

FELTS, pulp and paper makers
 Avers Limited, Lachute Mills, P.Q.

*Beveridge Paper Co., Limited, Montreal.

FENCES AND GATES
 *Dennis Wire & Iron Works Co., London, Ont.

*Canada Wire and Iron Works, Hamilton, Ont.

FENCING AND GATES, woven wire
 Banwell-Hoxie Wire Fence Co., Hamilton, Ont.

*Canada Wire and Iron Goods Co., Hamilton, Ont.

FENCING, wire
 C. H. Johnson & Sons, Limited, Montreal, Que.

FIRE PAILS
 *The E. B. Eddy Co., Ltd., Hull, Ont.

FIBRE, VULCANIZED, hard and flexible
 *Beveridge Paper Co., Limited, Montreal.

FILES
 Henry Disston & Sons, Limited, Toronto.

*The Nicholson File Co., Port Hope, Ont.

FILING CABINETS
 *Office Specialty Co., Newmarket, Ont.

FILING EQUIPMENT, wood & steel
 *Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

FILING SYSTEMS
 *Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

FILTER PAPERS
 *Beveridge Paper Co., Limited, Montreal.

FIRE ALARMS
 *Northern Electric Co., Limited, Montreal, Que.

FIRE DOOR HARDWARE
 *Richards Wilcox Canadian Co., Limited, London, Ont.

FIRE DOORS
 *A. B. Ormsby Co., Ltd., Toronto.

FIRE ENGINES

- *R. S. Bickle Co., Winnipeg and Woodstock.
- *The Watrous Engine Works Co., Limited, Brantford, Ont.

FIRE ESCAPES

- *Canada Wire and Iron Goods Co., Hamilton, Ont.
- *Dennis Wire & Iron Works Co., London, Ont.

FIRE EXTINGUISHERS

- *R. S. Bickle Co., Woodstock.
- *A. B. Ormsby Co., Ltd., Toronto.
- *Booth-Coulter Copper and Brass Co., Limited, Montreal, Que.
- *The General Fire Equipment Co., Limited, Toronto, Ont.

FIRE FIGHTING APPARATUS

- *R. S. Bickle Co., Winnipeg and Woodstock.
- *The Watrous Engine Works Co., Limited, Brantford, Ont.

FIRE HOSE

- *Canadian Consolidated Rubber Co., of Canada, Limited, Montreal, Que.
- *Gutta Percha and Rubber, Ltd., Toronto.

FIRE PREVENTION MATERIAL

- *Chicago Bridge & Iron Works, Bridgeburg, Ont.
- *Eureka Mineral Wool & Asbestos Co., Toronto.
- *The General Fire Equipment Co., Limited, Toronto.

FIRE PROOF WINDOWS AND DOORS

- *A. B. Ormsby Co., Ltd., Toronto.
- *Pedlar People, Ltd., Oshawa, Ont.
- *Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

FIRE SPRINKLER SYSTEMS

- *Chicago Bridge & Iron Works, Bridgeburg, Ont.
- *The General Fire Equipment Co., Limited, Toronto.
- *Purdy Mansell Co., Toronto.
- *H. G. Vogel Co., Montreal, Que.

FIRE AND WATER DEPARTMENT SUPPLIES

- *Chicago Bridge & Iron Works, Bridgeburg, Ont.
- *The Garth Co., Montreal, Que.

FISH, Atlantic Sea-Foods

- *Maritime Fish Corporation Ltd., Montreal, Que.

FITTINGS FOR SOIL PIPE

- *Anthes Foundry, Ltd., Toronto.

FITTINGS, steam

- *Warden King, Ltd., Montreal, Que.

FLAGS

- *Scythes & Co., Limited, Toronto.

FLASHLIGHTS

- *Canadian Carbon Co., Toronto.

FLOORING, hardwood

- *Seaman Kent Co., Ltd., Meaford, Ont.

FLUE LINERS

- *Standard Clay Products, Ltd., St. Johns, Que.

FORGES

- *Sheldons, Limited, Galt, Ont.

FORGINGS

- *Canada Forge Co., Ltd., Welland, Ont.
- *The Steel Co. of Canada, Limited, Hamilton, Ont.

FORGINGS, drop

- *Dominion Forge and Stamping Co., Walkerville, Ont.

FOUNDRY EQUIPMENT

- *Northern Crane Works, Limited, Walkerville, Ont.

FOUNTAIN FRUITS and Juices

- *J. J. McLaughlin, Ltd., Toronto.

FRICTION CLUTCH PULLEYS

- *Dodge Mfg. Co., Ltd., Toronto.

FROGS AND CROSSINGS,

- *manganese
Canadian Ramapo Iron Works, Ltd., Niagara Falls, Ont.

FUEL

- *Standard Fuel Co., Toronto.

FUR GARMENTS, men's and women's

- *Holt, Renfrew, Ltd., Quebec.

FUR GOODS

- *John W. Peck & Co., Limited, Montreal, Que.

FUR TRIMMINGS, ornaments and buttons

- *J. Henry Peters Co., 1 Mincing St., Toronto.

FURNACES

- *McClary Mfg. Co., London, Ont.
- *The Jas. Smart Mfg. Co., Limited, Brockville, Ont.

FURNACES, hot air

- *Bedford Stove Co., Bedford, Que.

FURNACES, oil burning

- *Canadian Hoskins Co., Walkerville, Ont.
- *Mechanical Engineering Works, Montreal, Que.

FURNITURE, hall

- *The George McLagan Furniture Co., Limited, Stratford, Ont.

FURNITURE, office

- *The Canadian Office and School Furniture Co., Ltd., Preston, Ont.

FURNITURE, reed and rattan

- *Imperial Rattan Co., Ltd., Stratford, Ont.

FUSES

- *Economy Fuse and Mfg. Co., Montreal.

GALVANIZED IRON

- *A. C. Leslie & Co., Montreal.

GALVANIZED SHEETS

- *Dominion Sheet Metal Co., Hamilton, Ont.

GALVANIZERS

- *Acme Stamping & Tool Works, Ltd., Hamilton, Ont.
- *Ontario Wind Engine and Pump Co., Limited, Toronto.

GASOLINE ENGINES

- *Ontario Wind & Pump Co., Ltd., Toronto.
- *De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

GASOLINE FIRE ENGINES

- *The Watrous Engine Works Co., Ltd., Brantford, Ont.

GASOLINE MOTORS, "Imperial"

- *Marine
Bruce Stewart & Co., Ltd., Charlottetown, P.E.I.

GASOLINE, storage systems

- *Steel Trough and Machine Co., Ltd., Tweed, Ont.

GASOLINE STORAGE SYSTEMS, special underground

- *S. F. Bowser & Co., Toronto.

GASOLINE

- *The Imperial Oil Co., Limited, Toronto.

GEARS, cut

- *Hamilton Gear & Machine, Toronto.

GEARS, noiseless fibre, also reinforced

- *Beveridge Paper Co., Limited, Montreal.

GENERATORS

- *Canadian Crocker-Wheeler Co., Ltd., St. Catharines, Ont.
- *Canadian Westinghouse Co., Ltd., Hamilton, Ont.

GINs

- *The Melchers Gin & Spirits Distillery Co., Ltd., Montreal, Que.

GLASSWARE

- *Dominion Glass Co., Limited, Montreal, Que.

GLASSWARE, cut

- *Roden Bros., Ltd., Toronto.

GLASS FOR BUILDINGS

- *Toronto Plate Glass Importing Co., Limited, Toronto.

GLASS BENDERS

- *Toronto Plate Glass Importing Co., Limited, Toronto.

GLASS, mirror

- *Toronto Plate Glass Importing Co., Limited, Toronto.

GLOVES AND MITTS

- *A. R. Clarke & Co., Ltd., Toronto.
- *Craig, Cowan Co., Ltd., Toronto.

GLUE

- *Canada Glue Co., Ltd., Brantford.
- *Delany and Pettit, Ltd., Toronto.

GOLD-FILLED WIRE AND PLATE

- *Canadian Seamless Wire Co., Toronto.

GOLD AND SILVER REFINERS

- *Canadian Seamless Wire Co., Toronto.

GRAIN CRUSHERS (Rapid Easy)

- *J. Fleury's Sons, Aurora, Ont.

GRAPE JUICE

- *J. J. McLaughlin, Ltd., Toronto.
- *The Welch Co., Ltd., St. Catharines.

GRATES

- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

GRAVITY CARRIERS

- *Canadian Mathews Gravity Carrier Co., Toronto.

GRILLES, metal

- *Canada Wire & Iron Goods Co., Hamilton, Ont.
- *Dennis Wire & Iron Works Co., London, Ont.

GRINDERS, Pedestal and Bench

- *Canadian Hart Wheels, Limited, Hamilton, Ont.

GRINDING and Polishing Machinery

- *Canadian Hart Wheels, Limited, Hamilton, Ont.

GRINDING WHEELS

- *Canadian Hart Wheels, Limited, Hamilton, Ont.
- *The Dominion Abrasive Wheel Co., Limited, New Toronto.

GRINDSTONES

- *Richards-Wilcox Canadian Co., Limited, London, Ont.

GUNN SECTIONAL BOOKCASES

- *The Geo. McLagan Furniture Co., Limited, Stratford, Ont.

GUY ANCHORS

- *B. J. Coghlin Co., Ltd., Montreal.

GYPSPUM, crushed

- *Albert Mfg. Co., Hillsborough, N.B.

GYPSPUM PRODUCTS

- *Manitoba Gypsum Co., Ltd., Winnipeg, Man.
- *De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

HALL FURNITURE

- *The Geo. McLagan Furniture Co., Limited, Stratford, Ont.

HAMS

- *F. W. Fearman Co., Ltd., Hamilton, Ont.

HANDLES (Axe, pick, sledge hammers, etc.)

- *The Lachute Shuttle Co., Limited, Lachute Mills, P.Q.

HANGERS

- *Dodge Mfg. Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

HARDWARE

- *Richards-Wilcox Canadian Co., Limited, London, Ont.
- *Taylor-Forbes Co., Limited, Guelph, Ont.
- *The Jas. Smart Mfg. Co., Limited, Brockville, Ont.

HARDWOOD FLOORING

- *Wilson Bros. Limited, Collingwood, Ont.

HARDWOOD INTERIOR FINISH

- *Wilson Bros., Ltd., Collingwood, Ont.

HARDWOOD VENEER DOORS TO DETAIL

- *Wilson Bros., Ltd., Collingwood, Ont.

HARNESS

- *Lamontagne Ltd., Montreal, Que.

HATS, men's straw

- *The Crown Hat Co., Limited, Galt, Ont.

HATS, ladies' and children's straw

- *The Crown Hat Co., Limited, Galt, Ont.

HATS, ladies' and children's felt and beaver

- *The Crown Hat Co., Limited, Galt, Ont.

HATS, ladies' felt and straw

- *Toronto Hat Mfg. Co., Toronto.

HAULAGE, Wire Rope

- *The Dominion Wire Rope Co., Ltd., Montreal, Que.

HEATERS

- *Watrous Engine Works Co., Ltd., Brantford, Ont.

HEATERS, feed water

- *Darling Bros., Ltd., Montreal.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

HEATING APPLIANCES

- *C. A. Dunham Co., Ltd., Toronto.
- *Darling Bros., Ltd., Montreal.
- *Sheldons, Limited, Galt, Ont.

HEATING SYSTEMS

- *C. A. Dunham Co., Ltd., Toronto.

HESSIANS

- *The Canadian Bag Co., Limited, Montreal, Que.
- *Scythes & Co., Limited, Toronto.

HINGES

- *The Steel Co. of Canada, Limited, Hamilton, Ont.

HOISTS

- *M. Beatty & Sons, Ltd., Welland, Ont.
- *Northern Crane Works, Limited, Walkerville, Ont.

HOISTS, electric and pneumatic

- *M. Beatty & Sons, Ltd., Welland, Ont.
- *Canadian Link Belt Co., Toronto.
- *Northern Crane Works, Limited, Walkerville, Ont.

HOISTING MACHINERY

- *M. Beatty & Sons, Ltd., Welland, Ont.
- *Northern Crane Works, Limited, Walkerville, Ont.

HOSE, fire

- *Canadian Consolidated Rubber Co., Limited, Montreal, Que.

HOSE, half, Imperial

- *Kingston Hosiery Co., Ltd., Kingston, Ont.

HOSE, rubber

- *Canadian Consolidated Rubber Co., Limited, Montreal, Que.
- *Gutta Percha & Rubber, Limited.

HYDRAULIC PRESSES

- *Bawden Machine Co., Limited, Toronto.
- *William R. Perrin, Ltd., Toronto.

ICE CREEPERS

- *Parmenter & Bulloch Co., Limited, Gananoque, Ont.

ICE-MAKING MACHINERY

- *The Linde Canadian Refrigeration Co., Limited, Montreal, Que.

INCUBATORS & BROODERS

- *Lee Mfg. Co., Ltd., Pembroke, Ont.

INJECTORS, automatic and autoperative

- *Penberthy Injector Co., Limited, Windsor, Ont.

INSULATING PAPER AND FIBRE

- *Beveridge Paper Co., Limited, Montreal.

INTERLOCKING RUBBER TILING

- *Gutta Percha & Rubber Mfg. Co., of Toronto, Limited, Toronto.

INVERTS

- *Standard Clay Products, Ltd., St. Johns, Que.

IRON

- *Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N.S.

IRON AND STEEL BARS

- *The Steel Co. of Canada, Limited, Hamilton, Ont.

IRON, refined bar

- *Starr Mfg. Co., Ltd., Dartmouth, N.S.

IRON STAIRWAYS

- *Canada Wire & Iron Goods Co., Hamilton, Ont.
- *Dennis Wire & Iron Works Co., London, Ont.

IRONWORK, architectural

- *Canada Wire & Iron Goods Co., Hamilton, Ont.

IRONWORK, ornamental

- *Canada Wire & Iron Goods Co., Hamilton, Ont.

IRON, LEAD AND PUTTY

- *A. R. Whittall, Montreal, Que.

JAM, canned goods, etc.

- *E. D. Smith & Son, Limited.

JAPANS, enamels, etc.

- *A. Muirhead Co., Ltd., Toronto.

JOINTERS

- *P. B. Yates Machine Co., Ltd., Hamilton, Ont.

JELLY POWDER

- *S. H. Ewing & Sons, Montreal, Que.

JEWELRY, enamelled souvenir

- *Caron Bros., Montreal, Que.

JEWELRY, gold-filled

- *Caron Bros., Montreal, Que.

JOIST HANGERS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

KELSEY WARM AIR GENERATOR

The Jas. Smart Mfg. Co., Limited, Brockville, Ont.

KILNS

*Sheldons, Limited, Galt, Ont.

KINDLING

Standard Fuel Co., Toronto.

KNIFE GRINDERS

*W. H. Banfield & Sons, Toronto.

KNITTED GOODS

*Penman's, Limited, Paris, Ont.

KNIVES

Henry Disston and Sons, Toronto
The Peter Hay Knife Co., Limited, Galt, Ont.

Simonds Canada Saw Co., Limited, Montreal, Que.

KNIVES, pulp and paper

Henry Disston and Sons, Toronto.
The Peter Hay Knife Co., Limited, Galt, Ont.

KODAKS AND PHOTOGRAPHIC SUPPLIES

Canadian Kodak Co., Ltd., Toronto.

LABELS

Lawson & Jones, Ltd., London, Ont.

LABELS, lithographed

Harris Lithographing Co., Toronto.

LACE LEATHER

F. C. McCordick, St. Catharines, Ont.

*Sadler & Haworth, Montreal, Que.

*The D. K. McLaren Belting Co., Limited, Montreal, Que.

*The J. C. McLaren Belting Co., Limited, Montreal, Que.

LADDERS

Stratford Mfg. Co., Ltd., Stratford, Ont.

LADDERS, step.

*Otterville Mfg. Co., Ltd., Otterville, Ont.

LADLES, foundry

*Northern Crane Works, Limited, Walkerville, Ont.

LAGER

E. L. Drewry, Winnipeg, Man.

LARD

F. W. Fearman Co., Ltd., Hamilton, Ont.

LATH

The C. Beck Mfg. Co., Ltd., Penetanguishene, Ont.

LATHE CHUCKS

Ker & Goodwin, Brantford, Ont.

LATHE-DOGS

Canadian Billings & Spencer, Ltd., Welland, Ont.

LAUNCHES

Peterboro Canoe Co., Ltd., Peterboro, Ont.

LAWN MOWERS

Taylor-Forbes Co., Limited, Guelph, Ont.

LAWN SWINGS

Stratford Mfg. Co., Ltd., Stratford, Ont.

LAVATORIES, enameled

Amherst Foundry Co., Limited, Amherst, N.S.

LAUNDRY SINKS

Amherst Foundry Co., Limited, Amherst, N.S.

LEAD

*The Consolidated Mining and Smelting Co. of Canada, Limited, Trail, B.C.

LEAD GRINDERS

Benjamin Moore & Co., Limited, Toronto.

LEAD SHEET

Toronto Plate Glass Importing Co., Limited, Toronto.

LEAD PIPE

*The Steel Co. of Canada, Limited, Hamilton, Ont.

Toronto Plate Glass Importing Co., Limited, Toronto.

*The Canada Metal Co., Toronto.

LEATHER

The Robson Leather Co., Limited, Oshawa, Ont.

LEATHER, bookbinders'

Clarke & Clarke, Ltd., Toronto.

LEATHER, fancy

Clarke & Clarke, Ltd., Toronto.

LEATHER GOODS

Lamontagne, Ltd., Montreal, Que.

LEATHER, hemlock sole

The Breithaupt Leather Co., Ltd., Berlin, Ont.

LEATHER, patent colt and side leather

*A. R. Clarke & Co., Ltd., Toronto.

LEATHER, sheep skin, etc.

Clarke & Clarke, Ltd., Toronto.

LEATHER, upholstering

Clarke & Clarke, Ltd., Toronto.

LEATHER, upper

A. Davis & Son, Ltd., Kingston, Ont.

LINK BELTING

*Canadian Link Belt Co., Toronto.

*The Dodge Mfg. Co., Ltd., Toronto.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

LINOLEUM

Dominion Oil Cloth Co., Limited, Montreal, Que.

LITHOGRAPHED BUSINESS STATIONERY

Business Systems, Ltd., Toronto.

LITHOGRAPHED TIN WARE

*MacDonald Mfg. Co., Limited, Toronto.

LITHOGRAPHERS

American Bank Note Company, Ottawa, Ont.

Harris Lithographing Co., Toronto.

Stone, Limited, Toronto.

Rolph & Clark, Limited, Toronto.

LOCKERS

*Canada Wire & Iron Works Co., Hamilton, Ont.

*Dennis Wire & Iron Works Co., London, Ont.

*Geo. B. Meadows, Wire, Iron and Brass Works Co., Toronto.

LOCOMOTIVE BLOCKS

Standard Clay Products, Limited, St. Johns, Que.

LOCOMOTIVES, industrial

*Montreal Locomotive Works, Ltd., Montreal, Que.

LOCOMOTIVE & MARINE BRASS WORKS

The James Morrison Brass Mfg. Co., Limited, Toronto.

LOOSE LEAF, BINDERS AND FORMS

Business Systems, Ltd., Toronto.

LOOSE LEAF SYSTEMS

Copeland-Chatterson Co., Limited, Brampton, Ont.

LOOSE LEAF SUPPLIES

The Esdale Press, Ltd., Edmonton, Ont.

LUBRICATORS, steam sight feed

Penberthy Injector Co., Limited, Windsor, Ont.

LUGS, for silos and water tanks

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

*Otterville Mfg. Co., Ltd., Otterville, Ont.

LUMBER

The C. Beck Mfg. Co., Ltd., Penetanguishene, Ont.

G. & J. Esplen, Montreal, Que.

LUMBER, asbestos

*Eureka Mineral Wool & Asbestos Co., Toronto.

LUMBER, spruce and pine, cedar railway ties and shingles

Bathurst Lumber Co., Ltd., Bathurst, N.B.

LUMBERING BLANKETS

Slingsby Mfg. Co., Ltd., Brantford, Ont.

LUMBER, red pine and spruce

Gillies Bros., Ltd., Braeside, Ont.

LUMBER, spruce, fir, larch and cedar

Fernie Lumber Co., Ltd., Fernie, B.C.

LUMBER, white pine

Gillies Bros., Ltd., Braeside, Ont.

MACHINE TOOLS

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, conveying

*Canadian Link Belt Co., Toronto.

*Canadian Mathews Gravity Carrier Co., Limited, Toronto.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

MACHINERY, flour mill

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

MACHINERY, grinding

*Canadian Hart Wheels, Limited, Hamilton, Ont.

MACHINERY, hoisting, etc.

*Polson Iron Works, Limited, Toronto.

J. & R. Weir, Montreal, Que.

*M. Beatty & Sons, Ltd., Welland, Ont.

*Northern Crane Works, Limited, Walkerville, Ont.

MACHINERY, ice cream

J. J. McLaughlin, Ltd., Toronto.

MACHINERY, iron working

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, pulp mill

*The Watrous Engine Works Co., Limited, Brantford, Ont.

MACHINERY, punching and shearing

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, railroad and car shop

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, roadmaking

Sawyer-Massey Co., Limited, Hamilton, Ont.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

MACHINERY, sawmill

The E. Long Mfg. Co., Limited, Orillia, Ont.

P. Payette & Co., Pentanguishene, Ont.

W. P. Plant, Hastings, Ont.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

*Yates, P. B., Machine Co., Ltd., Hamilton, Ont.

MACHINERY, sheet metal working

Brown, Boggs Co., Ltd., Hamilton, Ont.

MACHINERY, special

Bawden Machine Co., Limited, Toronto.

MACHINERY, tannery

W. P. Plant, Hastings, Ont.

MACHINERY, transmission

*Dodge Mfg. Co., Ltd., Toronto.

*Goldie & McCulloch Co., Limited, Galt, Ont.

MACHINERY, woodworking

*Yates, P. B., Machine Co., Ltd., Hamilton, Ont.

Preston Woodworking Machinery Co., Ltd., Preston, Ont.

*The Watrous Engine Works Co., Limited, Brantford, Ont.

MACHINE WRENCHES

*Canadian Billings & Spencer, Ltd., Welland, Ont.

MACHINES, painting

Spramotor Co., London, Ont.

MAGNESITE

Canadian Carbonate Co., Limited, Montreal, Que.

MALT

*Hiram Walker & Sons, Limited, Walkerville, Ont.

MAPLE PRODUCTS

*Maples, Limited, Toronto.

MAPS AND MAP MOUNTING

The Geo. M. Hendry Co., Limited, Toronto.

Stone, Limited, Toronto.

MARTINGALE RINGS AND SLIDE LOOPS

The Arlington Co. of Canada, Ltd., Toronto.

MATCHERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

MATCHES

*The E. B. Eddy Co., Ltd., Hull.

MECHANICAL STOKERS

*The Jones Underfeed Stoker Co., Ltd., Toronto.

MEDICINES, patented and pharmaceutical

Dr. Ed. Morin & Cie., Ltd., Quebec.

METAL, babbitt

*Canada Metal Co., Toronto.

*Tallman Brass and Metal Co., Hamilton, Ont.

Alonso W. Spooner, Limited, Port Hope, Ont.

METAL CEILING

*Metallic Roofing Co., Limited, Toronto.

METAL LATH

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

METAL PACKING

*Garlock Packing Company, Hamilton, Ont.

METAL, spinning and stamping

The Booth-Coulter Copper and Brass Co., Limited, Toronto.

METAL SHINGLES

*The Metallic Roofing Co. of Canada, Limited, Toronto.

METAL SIDING

*The Metallic Roofing Co., Ltd., Toronto.

MILK DEALERS' MACHINERY AND SUPPLIES

De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

MILLBOARD, asbestos

*Eureka Mineral Wool & Asbestos Co., Toronto.

MILLING CUTTERS

Pratt and Whitney Company of Canada, Dundas, Ont.

MITTS AND GLOVES (Indian, tan, red deerskins)

Holt, Renfrew Ltd., Quebec, Que.

A. R. Clarke & Co., Ltd., Toronto.

MOCCASINS AND SLIPPERS (Indian tanned leathers)

Holt, Renfrew Ltd., Quebec, Que.

MORTISERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

MOTOR CARS

*Ford Co. of Canada, Ford, Ont.

*Willys-Overland, Ltd., West Toronto.

MOTORS, electric (alternating current)

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

Consolidated Electric Co., Limited, Toronto.

*Jones & Moore Electric Co., Ltd., Toronto.

*Canadian Crocker-Wheeler Co., Ltd., St. Catharines, Ont.

*T. & H. Electric Co., Hamilton.

MOTORS, electric (direct current)

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

Consolidated Electric Co., Limited, Toronto.

*Jones & Moore Electric Co., Ltd., Toronto.

*T. & H. Electric Co., Hamilton.

MOTORS, electric (repairing)

Consolidated Electric Co., Limited, Toronto.

*T. & H. Electric Co., Hamilton.

MOULDERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

NAILS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

NAILS, copper

Parmenter and Bulloch Co., Ltd., Gananoque, Ont.

NAILS, wire

Parmenter and Bulloch Co., Ltd., Gananoque, Ont.

The Graham Nail Works, Toronto.

NAPHTHA

*The Imperial Oil Co., Limited, Toronto.

NICKEL OXIDE

Coniagas Reduction Co., Limited, St. Catharines, Ont.

NUTS

*John Morrow Screw & Nut Co., Limited, Ingersoll, Ont.

*The National Acme Mfg. Co., Montreal, Que.

*The Steel Co. of Canada, Limited, Hamilton, Ont.

OAKUM, plumbers, Canadian Navy

Factory Waste and Metal Co., Montreal, Que.

*Scythes & Co., Ltd., Toronto.

OAT CRUSHERS AND FLAKERS

J. Fleury's Sons, Aurora, Ont.

OFFICE DESKS

*Goderich Organ Co., Goderich, Ont.

OFFICE EQUIPMENT

*Office Specialty Co., Newmarket, Ont.

OFFICE FURNITURE

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

OILS

Brandram-Henderson, Ltd., Montreal, Que.

A. Ramsay & Son Co., Montreal, Que.

Sherwin-Williams Co. of Canada, Limited, Montreal, Que.

OIL FILTRATION AND CIRCULATING SYSTEMS

S. F. Bowser & Co., Toronto.

OIL STORAGE SYSTEMS, self-measuring

S. F. Bowser & Co., Toronto.

OIL COMPANIES

*Canadian Oil Cos., Toronto.

Commercial Oil Co., Ltd., Hamilton, Ont.

*Imperial Oil Co., Toronto.

OILS (Petroleum products)

*British American Oil Co., Limited, Toronto.

*The Imperial Oil Co., Limited, Toronto.

OILS, road

*Paterson Manufacturing Company, Toronto and Montreal.

OILCLOTHS, floor and table

Dominion Oil Cloth Co., Limited, Montreal, Que.

ORGANS

*Goderich Organ Co., Goderich, Ont.

Karn-Morris Piano and Organ Co., Ltd., Woodstock, Ont.

Thomas Organ & Piano Co., Woodstock, Ont.

ORGANS, pipe

Casavant Freres, St. Hyacinthe, Que.

Karn-Morris Piano and Organ Co., Ltd., Woodstock, Ont.

ORGANS, parlor

*Goderich Organ Co., Goderich, Ont.

ORNAMENTAL IRON WORK

*Canada Wire & Iron Goods Co., Hamilton, Ont.

*Dennis Wire & Iron Works Co., London, Ont.

*The Geo. B. Meadows, Toronto Iron and Brass Goods Works Co., Limited, Toronto.

OVENS, portable bake

Bedford Stove Co., Bedford, Que.

Mackenzie & Co., Ottawa, Ont.

Peerless Overall Co., Rock Island, Que.

Walker Pant and Shirt Co., Walkerville and Chatham, Ont.

The Standard Shirt Co., Limited, Montreal, Que.

OVERCOATINGS

Rosamond Woollen Co., Almonte, Ont.

OVERHEAD RUNWAYS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

OXY-ACETYLENE WELDING

*L'Air Liquide Society, Montreal.

OXYGEN

*L'Air Liquide Society, Montreal.

PACKING BOXES

Barchard & Co., Limited, Toronto.

PACKING, engine

*Garlock Packing Co., Hamilton.

PACKERS, parchment papers, discs, shavings

*Beveridge Paper Co., Limited, Montreal.

PACKING, rubber

*Canadian Consolidated Rubber Co., Limited, Montreal, Que.

*Gutta Percha & Rubber, Limited, Jenkins Bros., Ltd., Montreal, Que.

PAISLS AND TUBS, wooden

The C. Beck Mfg. Co., Limited, Penetanguishene, Ont.

PAINTERS' SUPPLIES

A. Muirhead Co., Ltd., Toronto.

PAINTS

R. C. Jamieson & Co., Limited, Montreal, Que.

PAINTS and VARNISHES

A. Muirhead Co., Ltd., Toronto.

Benjamin Moore & Co., Limited, Toronto.

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

The Imperial Varnish & Color Co., Limited, Toronto.

The Staneland Co., Ltd., Victoria, B.C.

A. Ramsay & Sons Co., Montreal, Que.

*The Dougall Varnish Co., Limited, Montreal, Que.

Standard Paint Co. of Canada, Limited, Montreal, Que.

*Toch Bros., Toronto.

PAINTS, barn and bridge

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

PAINTS, preservative

Standard Paint Co. of Canada, Limited, Montreal, Que.

*Paterson Manufacturing Company, Toronto and Montreal.

*Toch Bros., Toronto.

PAPER BAGS

*Beveridge Paper Co., Limited, Montreal.

PAPER, book

Barber Paper & Coating Mills, Ltd., Georgetown, Ont.

PAPER BOXES

King Paper Box Co., Ltd., Montreal, Que.

*Rudd Paper Box Co., Limited, Toronto.

PAPER, coated, book and label

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, coated box board

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, coated cover

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, envelope

Provincial Paper Mills Limited, Georgetown, Ont.

The Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER, enamelled blotting

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, gummed tapes

Gummed Papers, Ltd., Brampton, Ont.

PAPER, kraft and all wrappings, printings and specialties

*Beveridge Paper Co., Limited, Montreal.

PAPER, label

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, ledger

*Howard Smith Paper Mills, Ltd., Montreal.

*Rolland Paper Co., Limited, Montreal, Que.

The Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER, news

*The Riordon Pulp and Paper Co., Montreal, Que.

PAPER, super-book

The Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER, wall

Stauntons, Ltd., Toronto.

PAPER, waxed

Business Systems, Ltd., Toronto.

PAPER, wrapping, printing and specialties

*Beveridge Paper Co., Ltd., Montreal.

*The Riordon Pulp and Paper Co., Montreal, Que.

PAPER, writing

The Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER, writing, high-grade

*Howard Smith Paper Mills, Ltd., Montreal.

*Rolland Paper Co., Limited, Montreal, Que.

PAPERS, bond

*Howard Smith Paper Mills, Ltd., Montreal.

*Rolland Paper Co., Ltd., Montreal, Que.

PAPERS, building

Bathurst Lumber Co., Ltd., Bathurst, N.B.

*The Riordon Pulp and Paper Co., Montreal, Que.

Standard Paint Co. of Canada, Ltd., Montreal, Que.

PARK SEATS

Stratford Mfg. Co., Ltd., Stratford, Ont.

PARLOR SUNDRIES

The Geo. McLagan Furniture Co., Limited, Stratford, Ont.

PATENTS

Fetherstonhaugh & Co., Toronto.

Ridout and Maybee, Toronto.

PATENT LITIGATION

Ridout and Maybee, Toronto.

PAY ROLL AUDITS

*International Time Recording Co. of Canada, Ltd., Toronto.

PEAS AND BEANS FOR SEED

W. P. Niles, Ltd., Wellington, Ont.

PERFORATED METALS

*Canada Wire & Iron Goods Co., Hamilton, Ont.

PERFORATED MUSIC ROLLS

The Otto Higel Co., Ltd., Toronto.

PERFUMES AND TOILET PREPARATIONS

Sovereign Perfumes Ltd., Toronto.

PETROLEUM PRODUCTS

*The Imperial Oil Co., Limited, Toronto.

PHOTOMAILERS

*The Thompson & Norris Co. of Canada, Ltd., Niagara Falls, Ont.

PIANOS

Dominion Organ & Piano Co., Ltd., Bowmanville, Ont.

*Gourlay, Winter and Leeming, Toronto.

Karn-Morris Piano and Organ Co., Limited, Woodstock, Ont.

PIANO ACTIONS

The Otto Higel Co., Ltd., Toronto.

PIANO KEYS

The Otto Higel Co., Ltd., Toronto.

PIANOS, player

*Gourlay, Winter and Leeming, Toronto.

Karn-Morris Piano and Organ Co., Limited, Woodstock, Ont.

PIANO, player actions

The Otto Higel Co., Ltd., Toronto.

PIANO STOOLS and BENCHES

*Goderich Organ Co., Goderich, Ont.

PICKLES AND CATSUPS

T. A. Lytle Co., Ltd., Toronto.

PIG IRON

*The Steel Co. of Canada, Limited, Hamilton, Ont.

PINE DOORS, SASH, MOULDINGS, ETC.

Wilson Bros., Limited, Collingwood, Ont.

PINS, society, emblems and badges

Caron Bros., Montreal, Que.

PIPE, cast iron, for water and gas

National Iron Works, Ltd., Toronto.

PIPE COUPLINGS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

PIPE COVERINGS

*Eureka Mineral Wood & Asbestos Co., Toronto.

PIPE ORGANS

Karn-Morris Piano and Organ Co., Limited, Woodstock, Ont.

PIPES, culvert

Standard Clay Products, Ltd., St. Johns, Que.

PIPE AND NIPPLE, black and galvanized

*Canadian Tube & Iron Co., Ltd., Montreal, Que.

PIPE, sewer

Hamilton and Toronto Sewer Pipe Co., Limited, Hamilton, Ont.

Standard Clay Products, Ltd., St. Johns, Que.

PIPE, soil and fittings

Athes Foundry, Ltd., Toronto and Winnipeg.

Warden King Lt., Montreal, Que.

PIPE AND TUBES, wrought

*Page-Hersey Iron Tube and Lead Co., Ltd., Toronto.

PIPE, threading and cutting off machines

John H. Hall & Sons, Limited, Brantford, Ont.

PISTON RODS

*The Canadian Drawn Steel Co., Limited, Hamilton, Ont.

*Union Drawn Steel Co., Limited, Hamilton, Ont.

PLANERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

PLANING MILLS

G. & J. Esplen, Montreal, Que.

PLOWS

J. Fleury's Sons, Aurora, Ont.

PLUMBERS' SUPPLIES

The Garth Co., Montreal, Que.

The James Morrison Brass Mfg. Co., Ltd., Toronto.

PLUMBING APPLIANCES

Standard Sanitary Mfg. Co., Ltd., Limited, Toronto.

PLUMBING SUPPLIES

Toronto Plate Glass Importing Co., Limited, Toronto.

PNEUMATIC MACHINERY

*Canadian Ingersoll-Rand Co., Sherbrooke, P.Q.

POLE LINE MATERIAL (wooden insulator top pins, side blocks, pole steps, cross arms)

The Lachute Shuttle Co., Limited, Lachute Mills, P.Q.

POLES, curtain

Daly & Morin, Montreal, Que.

POLES, Flag

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

POLES, telegraph and telephone, cedar

Ferne Lumber Co., Ltd., Fernie, B.C.

PORK PACKERS AND CHEESE EXPORTERS

The Ingersoll Packing Co., Limited, Ingersoll, Ont.

POSTS, split cedar fence

Ferne Lumber Co., Ltd., Fernie, B.C.

POSTERS

Stone, Limited, Toronto.

POULTRY SUPPLIES AND MEDICINES

Lee Mfg. Co., Ltd., Pembroke, Ont.

POWDER, blasting

Canadian Explosives, Ltd., Montreal, Que.

POWER PRESSES

*Canadian Boomer & Boschert Press Co., Limited, Montreal, Que.

*William R. Perrin, Ltd., Toronto.

PRESERVATIVE PAINT

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

PRESERVATIVE PAINT FOR BOILERS

*Beveridge Paper Co., Limited, Montreal.

PRESSES, baling and filter

*Canadian Boomer & Boschert Press Co., Ltd., Montreal, Que.

*William R. Perrin, Ltd., Toronto.

PRESSES, hydraulic

*Canadian Boomer & Boschert Press Co., Limited, Montreal, Que.

PRESSES, sheet metal stamping

Brown, Boggs Co., Ltd., Hamilton, Ont.

PRESSES, veneer

*William R. Perrin, Ltd., Toronto.
 *Canadian Boomer & Boschert Press Co., Ltd., Montreal, Que.

PRINTERS

Rous & Mann, Ltd., Toronto.
 R. G. McLean, Toronto.

PRINTERS, catalogue

R. G. McLean, Toronto.

PRINTING AND LITHOGRAPHING

Lawson & Jones, Limited, London, Ont.

PULLEYS

*Dodge Mfg. Co., Ltd., Toronto.
 *The Goldie & McCulloch Co., Ltd., Galt, Ont.

PULP, bleached sulphite

The Edward Partington Pulp and Paper Co., St. John, N.B.

PULP, sulphate and sulphite

Bathurst Lumber Co., Ltd., Bathurst, N.B.

PUMPS

*Bawden Machine Co., Ltd., Toronto.
 *Canadian Fairbanks-Morse Company, Limited, Montreal, Que.
 *Darling Bros., Ltd., Montreal.
 *Ontario Wind Engine & Pump Co., Ltd., Toronto.
 *Smart-Turner Machine Co., Ltd., Hamilton, Ont.
 Sparamotor Co., London, Ont.

PUMPS, boiler feed

*Bawden Machine Co., Ltd., Toronto.
 *Smart-Turner Machine Co., Ltd., Hamilton, Ont.
 *The Goldie & McCulloch Co., Ltd., Galt, Ont.

PUMPS, centrifugal

*M. Beatty & Sons, Ltd., Welland, Ont.
 *Smart-Turner Machine Co., Ltd., Hamilton, Ont.
 *Waterous Engine Works Co., Ltd., Brantford, Ont.

PUMPS, iron

*Goold-Shapley-Muir Co., Limited, Brantford, Ont.
 *Smart-Turner Machine Co., Ltd., Hamilton, Ont.
 *Waterous Engine Works Co., Ltd., Brantford, Ont.

PUMPS, turbine and reciprocating

*Bawden Machine Co., Ltd., Toronto.
 *Smart-Turner Machine Co., Ltd., Hamilton, Ont.
 John McDougall, Caledonian Iron Works Co., Ltd., Montreal, Que.

PUNCHES

*Pratt & Whitney Co., Dundas.

PYROMETERS

*Canadian Hoskins Co., Walkerville, Ont.

RADIATORS

Taylor-Forbes Co., Limited, Guelph, Ont.
 Warden King, Ltd., Montreal, Que.

RAILINGS, brass and iron

*Dennis Wire & Iron Works Co., London, Ont.

RAILWAY SIGNAL APPLIANCES

General Railway Signal Co. of Canada, Ltd., Montreal, Que.

RAILWAY SUPPLIES

*Canadian Steel Foundries, Ltd., Montreal, Que.
 *Chicago Bridge & Iron Works, Bridgeburg, Ont.
 B. J. Coghlin Co., Ltd., Montreal, Que.

RAILWAY TARIFF BINDERS

The Esdale Press Ltd., Edmonton.

READY-TO-WEAR GARMENTS, LADIES'

H. C. Boulter Co., Ltd., Toronto.

REAMERS

*Pratt & Whitney Co., Dundas.
 *Butterfield & Co., Rock Island, P.Q.

"REDWOOD" lager

E. L. Drewry, Winnipeg, Man.

REED AND RATTAN GOODS

Canada Furniture Mfgs., Limited, Woodstock, Ont.

REFRIGERATORS

Sanderson-Harold Co., Ltd., Paris, Ont.
 Lee Mfg. Co., Ltd., Pembroke, Ont.

REFRIGERATING MACHINERY

The Linde Canadian Refrigeration Co., Ltd., Montreal, Que.

REFRIGERATORS, store, homes and institutions

Ham & Nott Co., Ltd., Brantford, Ont.
 John Hillock & Co., Ltd., Toronto.

REINFORCEMENT BARS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

REINFORCEMENT FOR CONCRETE

*Canada Wire & Iron Goods Co., Hamilton, Ont.
 *Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

REVOLVING DOORS

*A. B. Ormsby Co., Ltd., Toronto.

RINGS, gold

Caron Bros., Montreal, Que.

RIVETS

*Canadian Tube & Iron Co., Ltd., Hamilton, Ont.
 *The Steel Co. of Canada, Limited, Hamilton, Ont.

RIVETS, bifurcated and tubular

Parmenter & Bulloch Co., Limited, Gananoque, Ont.

RIVETS AND BURRS, iron, copper and brass

Parmenter & Bulloch Co., Limited, Gananoque, Ont.

ROLLERS, shade

Daly & Morin, Montreal, Que.

ROOFING, metal

*Metallic Roofing Co., Limited, Toronto.

ROOFING, ready to lay

Standard Paint Co. of Canada, Ltd., Montreal, Que.
 *Paterson Mfg. Co., Toronto and Montreal.

ROOF TRUSSES

*The Canadian Bridge Co., Ltd., Walkerville, Ont.
 *Dominion Bridge Co., Ltd., Montreal, Que.

ROPE

*Doon Twines Ltd., Doon, Ont.
 *Shurly & Derrett, Ltd., Toronto.

ROPE, cotton

Hamilton Cotton Co., Hamilton, Ont.

RUBBER FOOTWEAR

Ames Holden, McCready, Limited, Montreal, Que.
 *Gutta Percha & Rubber, Ltd.
 The Miner Rubber Co., Limited, Granby, Que.

RUBBER GOODS

*Canadian Consolidated Rubber Co., Limited, Montreal, Que.
 *Gutta Percha & Rubber, Ltd.

RUBBER MOULDS

Bawden Machine Co., Ltd., Toronto.

RUBBER PACKING

*Garlock Packing Company, Hamilton, Ont.

RULES

The Lufkin Rule Co. of Canada, Ltd., Windsor, Ont.

RYE

The St. Hyacinthe Distillery Co., Ltd., St. Hyacinthe, Que.

SADDLERY HARDWARE

*Dominion Forge and Stamping Co., Walkerville, Ont.

SAFES

*Goldie & McCulloch Co., Limited, Galt, Ont.

SAMPLE CASES

The M. Langmuir Mfg. Co. of Toronto, Ltd., Toronto.
 J. Eveleigh & Co., Ltd., Montreal, Que.

SANDERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

SANDPAPER

*Delany and Pettit, Ltd., Toronto.

SASH CORD, cotton

Hamilton Cotton Co., Hamilton, Ont.

SALT

Canadian Salt Co., Ltd., Windsor, Ont.
 The Dominion Salt Co., Limited, Sarnia, Ont.

SANITARY PAPER TOWELS

*E. B. Eddy Co., Ltd., Hull, Que.

SAW SHARPENING MACHINERY

*Canadian Hart Wheels, Limited, Hamilton, Ont.

SAWS

Henry Disston & Sons, Limited, Toronto.
 Shurly & Deitrich, Galt, Ont.

SAWS, crosscut and band

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.
 Shurly & Deitrich, Galt, Ont.

SAWS, circular mill

Shurly & Deitrich, Galt, Ont.

SAWS, hack

*Victor Saw Works, Ltd., Hamilton, Ont.

SAWS, of all kinds

Simonds Canada Saw Co., Limited, Montreal, Que.

SAWS, rip

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.
 Shurly & Deitrich, Galt, Ont.

SAWMILLS

G. & J. Esplen, Montreal, Que.
 *The Waterous Engine Works Co., Ltd., Brantford, Ont.

SAWS, specialties

*Victor Saw Works, Ltd., Hamilton, Ont.

SCALES

The Gurney Scale Co., Hamilton, Ont.

SCALES, counter

The Gurney Scale Co., Hamilton, Ont.

SCALES, railway track, etc.

The Gurney Scale Co., Hamilton, Ont.

SCREENS

*Canada Wire & Iron Goods Co., Hamilton, Ont.

SCREEN DOORS AND WINDOWS

Sanderson-Harold Co., Ltd., Paris, Ont.
 Ham & Nott Co., Ltd., Brantford, Ont.

SCREWS

*John Morrow Screw & Nut Co., Ltd., Ingersoll, Ont.
 *The National Acme Mfg. Co., Montreal, Que.
 *The Steel Co. of Canada, Limited, Hamilton, Ont.

SCREW PLATES

*Butterfield & Co., Rock Island, P.Q.

SECURITIES, engraved

American Bank Note Co., Ottawa, Ont.

SERGES

Rosamond Woollen Co., Almonte, Ont.

SHAFTING

Canada Forge Co., Ltd., Welland, Ont.
 *Canadian Drawn Steel Co., Ltd., Hamilton, Ont.
 *The Goldie & McCulloch Co., Ltd., Galt, Ont.
 *Union Drawn Steel Co., Limited, Hamilton, Ont.
 *Dodge Mfg. Co., Ltd., Toronto.

SHANTY BLANKETS

Slingsby Mfg. Co., Ltd., Brantford, Ont.

SHAPERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

SHEAR BLADES, iron

The Peter Hay Knife Co., Limited, Galt, Ont.

SHEATHING

*Paterson Mfg. Co., Toronto and Montreal.

SHEATHING, asbestos corrugated

*Eureka Mineral Wool & Asbestos Co., Toronto.

SHEET METAL STAMPINGS

Acme Stamping & Tool Works, Ltd., Hamilton, Ont.

SHINGLES

Bathurst Lumber Co., Ltd., Bathurst, N.B.

SHIRTS

MacKenzie & Co., Ottawa, Ont.
 John W. Peck & Co., Ltd., Montreal, Que.

SHEETS, galvanized

*Dominion Sheet Metal Co., Ltd., Hamilton.

SHIRTS, workmen's

*A. R. Clarke & Co., Ltd., Toronto.

SHOE PEGWOOD

O. Chalifour, Quebec, Que.

SHOE LININGS

Galt Knitting Co., Ltd., Galt, Ont.

SHOES, running and athletic

Ames-Holden-McCready, Ltd., Montreal, Que.

SHOOKS

Barchard & Co., Ltd., Montreal, Que.

SILVER BULLION

Coniagas Reduction Co., Ltd., St. Catharines, Ont.

SILVERSMITH

Canadian Wm. A. Rogers, Ltd., Toronto.
 Standard Silver Co., Toronto.

SILVERWARE, sterling

Roden Bros., Limited, Toronto.

SINKS, enamelled

Amherst Foundry Co., Limited, Amherst, N.S.

SKATES, figure

Canada Cycle and Motor Co., Ltd., Toronto.

SKATES, genuine Acme

Canada Cycle and Motor Co., Ltd., Toronto.

SKATES, hockey

Canada Cycle and Motor Co., Ltd., Toronto.

SKATES, ice

Canada Cycle and Motor Co., Ltd., Toronto.

SKIFFS

Peterboro Canoe Co., Ltd., Peterboro, Ont.

SKYLIGHTS

*A. B. Ormsby Co., Ltd., Toronto.
 *Metallic Roofing Co., Limited, Toronto.

SLEIGHS

Tudhope-Anderson Co., Limited, Orillia, Ont.

SLIPPERS

Ames-Holden-McCready, Ltd., Montreal, Que.

SMOKE CONSUMERS

*The Jones Underfeed Stoker Co., Ltd., Toronto.

SMOKE-STACKS

*Steel Trough and Machine Co., Ltd., Tweed, Ont.

SOAPS

J. Barsalou & Co., Ltd., Montreal, Que.

SOAP (soft, oil)

The Imperial Varnish & Color Co., Ltd., Toronto.
 Sherwin-Williams Co. of Canada, Limited, Montreal, Que.

SODA WATER FOUNTAINS

J. J. McLaughlin, Ltd., Toronto.

SOIL PIPE

Anthes Foundry, Ltd., Toronto.

SOLDER

Alonzo W. Spooner, Ltd., Port Hope, Ont.
 *Canada Metal Co., Toronto.
 *Tallman Brass & Metal Co., Hamilton, Ont.

SOLDER, silver

Geo. H. Lees & Co., Hamilton.

SOLDER, wire and bar

*American Can Co., Montreal, and Hamilton.

SOLDERING IRONS AND COPPERS

Brown, Boggs Co., Ltd., Hamilton, Ont.

SNOWSHOES

Holt, Renfrew, Ltd., Quebec, Que.

SPARK PLUGS

Canadian Carbon Co., Limited, Toronto.

SPIRAL CONVEYORS

*Canadian Mathews Gravity Carrier Co., Ltd., Toronto.
 *The Goldie & McCulloch Co., Ltd., Galt, Ont.

SPLIT PEAS

H. Murton, Guelph, Ont.

SPIKES, railway and marine

Starr Mfg. Co., Ltd., Dartmouth, N.S.

SPIRITS

The St. Hyacinthe Distillery Co., Ltd., St. Hyacinthe, Que.

*Hiram Walker & Sons, Limited, Walkerville, Ont.

SPORTING MEDALS AND TROPHIES

Roden Bros., Limited, Toronto.

SPRAYERS

Sparamotor Co., London, Ont.

SPRING COTTERS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

SPRINGS

*Canadian Steel Foundries, Ltd., Montreal, Que.

J. J. Coghlin Co., Ltd., Montreal, Que.

Guelph Spring & Axle Co., Ltd., Guelph, Ont.

SPRINGS, carriage and automobile

Guelph Spring and Axle Co., Ltd., Guelph, Ont.

SPRINKLER SYSTEMS

*Chicago Bridge & Iron Works, Bridgeburg, Ont.

*General Fire Equipment Co., Ltd., Toronto.

*Purdy, Mansell, Ltd., Toronto.

*Vogel Co. of Canada, Ltd., Montreal, Que.

SPROCKETS, gray iron and flint rim

*Canadian Link Belt Co., Toronto.

STAINS

R. C. Jamieson & Co., Ltd., Montreal, Que.

STAINS, creosote shingle

A. Muirhead Co., Ltd., Toronto.

STAMPINGS

*Dominion Forge and Stamping Co., Ltd., Walkerville, Ont.

STAMPS, steel, brass and rubber

Pritchard-Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

STAMP MILLS

*Jenckes Machine Co., Sherbrooke.

STATIONERY, office

Harris Lithographing Co., Toronto.

STEAM PIPE AND BOILER COVERINGS, asbestos

*Eureka Mineral Wool & Asbestos Co., Toronto.

STEAM SHOVELS

*M. Beatty & Sons, Ltd., Welland, Ont.

STEAM SPECIALTIES

*C. A. Dunham Co., Ltd., Toronto.

*Darling Bros., Ltd., Montreal.

*Sheldons, Ltd., Galt.

STEAM TRAPS

*C. A. Dunham Co., Ltd., Toronto.

*Canadian Morehead Manufacturing Co., Limited, Woodstock.

STEEL

*Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N.S.

STEEL BILLETS AND BLOOMS

*The Steel Company of Canada, Limited, Hamilton.

STEEL BUILDINGS

*The Canadian Bridge Co., Ltd., Walkerville, Ont.

*Dominion Bridge Co., Ltd., Montreal.

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

STEEL CASTINGS

*Canadian Steel Foundries, Ltd., Montreal, Que.

*Dominion Steel Foundry Co., Ltd., Hamilton.

*Joliette Steel Co., Ltd., Montreal.

STEEL FILING EQUIPMENT

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

STEEL PEN STOCKS

*Jenckes Machine Co., Sherbrooke.

STEEL RODS

*The Steel Co. of Canada, Ltd., Hamilton.

STEEL SASH

*Dennis Wire & Iron Works Co., London.

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

STEEL SHELVING

*Dennis Wire & Iron Works Co., London.

STEEL WIRE RODS

*The Steel Company of Canada, Limited, Hamilton.

TELEPHONE ACCESSORIES

*Northern Electric Co., Limited, Montreal.

STENCILS, brass

Pritchard-Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

STEREOTYPING

Central Press Agency, Toronto

STOKERS

*The Jones Underfeed Stoker Co., Ltd., Toronto.

STOOLS AND BENCHES, piano and organ

*Otterville Mfg. Co., Ltd., Otterville, Ont.

STOOLS, steel factory

*Steel Trough and Machine Co., Ltd., Tweed, Ont.

STONE

The Corinthian Stone Co., Guelph, Ont.

The Hagersville Contracting Co., Hagersville, Ont.

STORE FITTINGS

The Canadian Office & School Furniture Co., Ltd., Preston, Ont.

STOVES

Smith Foundry Co., Ltd., Fredericton, N.B.

Tudhope-Anderson Co., Limited, Orillia, Ont.

Bedford Stove Co., Bedford, Que.

STOVE LININGS

Standard Clay Products, Ltd., St. Johns, Que.

STOVES AND RANGES

Bedford Stove Co., Bedford, Que.

Lee Mfg. Co., Ltd., Pembroke, Ont.

The Jas. Smart Mfg. Co., Ltd., Brockville, Ont.

McClary Mfg. Co., London, Ont.

STRETCHERS, lace curtain

*Otterville Mfg. Co., Ltd., Otterville, Ont.

STRUCTURAL STEEL

*Dominion Bridge Co., Montreal.

*Hamilton Bridge Works Co., Ltd., Hamilton.

*McKinnon Holmes & Co., Sherbrooke, P.Q.

*The Canadian Bridge Co., Ltd., Walkerville, Ont.

*The Structural Steel Co., Ltd., Montreal.

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J. Eveleigh & Co., Ltd., Montreal.

The M. Langmuir Mfg. Co. of Toronto, Ltd., Toronto.

SURFACERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

SWITCHES, railway

Canadian Ramapo Iron Works, Ltd., Niagara Falls, Ont.

SWITCHES AND FROGS

*Canadian Steel Foundries, Ltd., Montreal, Que.

SWITCH STANDS

Canadian Ramapo Iron Works, Ltd., Niagara Falls, Ont.

TABLE COVERS, chenille

Hamilton Cotton Co., Hamilton, Ont.

TANKS

*Chicago Bridge & Iron Works, Bridgeburg, Ont.

Goold-Shapley-Muir Co., Ltd., Brantford, Ont.

*McKinnon Holmes & Co., Sherbrooke, P.Q.

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

*The Goldie & McCullough Co., Ltd., Galt.

*The Watrous Engine Works Co., Ltd., Brantford.

TANKS, steel storage

*Steel Trough and Machine Co., Ltd., Tweed, Ont.

TANNERS' SUPPLIES

McClary Mfg. Co., London, Ont.

TAPS

*Butterfield & Co., Rock Island, P.Q.

*Pratt & Whitney Co., Dundas.

TAPES, measuring

The Lufkin Rule Co., of Canada, Ltd., Windsor, Ont.

TAPES, paper and cloth, gummed and ungummed

Gummed Papers, Ltd., Brampton.

TELEPHONE ACCESSORIES

*Canadian Independent Telephone Co., Toronto.

*Northern Electric Co., Limited, Montreal, Que.

TENTS

Mackenzie & Co., Ottawa, Canada.

Turner, J. J., & Sons, Peterboro, Ont.

*Scythes & Co., Ltd., Toronto.

TERRA ALBA

*Albert Mfg. Co., Hillsborough, N.B.

TERRA COTTA (architectural)

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Dunlop Tire & Rubber Goods Co., Ltd., Toronto.

*Gutta Percha & Rubber, Ltd.

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*International Time Recording Co. of Canada, Ltd., Toronto.

TIRES, cycle, auto and truck

Dunlop Tire & Rubber Goods Co., Ltd., Toronto.

*Gutta Percha & Rubber, Ltd.

TRADE MARKS AND DESIGNS

Ridout & Maybee, Toronto.

TRAPS

*C. A. Dunham Co., Ltd., Toronto.

*Canadian Morehead Mfg. Co., Woodstock.

TRANSFORMERS

*The Canadian Crocker-Wheeler Co., Limited, St. Catharines.

TOOLS, track

B. J. Coghlin Co., Ltd., Hamilton, Ont.

TOOLS, sheet metal workers'

Brown, Boggs Co., Ltd., Hamilton, Ont.

TRANSLATIONS INTO FRENCH

Raoul Renault, Quebec City.

TRANSMISSION MACHINERY

*Canadian Link Belt Co., Toronto.

*Dodge Mfg. Co., Ltd., Toronto.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

*The Watrous Engine Works Co., Ltd., Brantford.

TROLLEYS

*Richard-Wilcox Canadian Co., Limited, London, Ont.

*Northern Crane Works, Limited, Walkerville.

TRUCKS

The Gurney Scale Co., Hamilton, Ont.

*Northern Crane Works, Limited, Walkerville.

TRUCKS, brick, tile and lumber

*Watrous Engine Works Co., Ltd., Brantford.

TRUCKS, fibre and reinforced

*Beveridge Paper Co., Limited, Montreal.

TRUCKS, motor

*National Steel Car Co., Limited, Hamilton.

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The W. S. Mahaffy Co., Toronto.

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*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

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Lamontagne Ltd., Montreal, Que.

J. Eveleigh & Co., Ltd., Montreal, Que.

The M. Langmuir Mfg. Co. of Toronto, Ltd., Toronto.

TUBING, brass and copper

*Booth-Coulter Copper & Brass Co., Ltd., Toronto.

Canadian Seamless Wire Co., Toronto.

*Tallman Brass and Metal Co., Hamilton, Ont.

TUBING, fibre

*Beveridge Paper Co., Limited, Montreal.

TUBING, gold and silver

Canadian Seamless Wire Co., Toronto.

TUMBLERS, foundry

*Northern Crane Works, Limited, Walkerville.

*Smart-Turner Machine Co., Ltd., Hamilton, Ont.

TURBINES, steam

*The Canadian Crocker-Wheeler Co., Limited, St. Catharines.

TWEEDS

Rosamond Woollen Co., Almonte, Ont.

TWINES

*Doon Twines Ltd., Doon, Ont.

*Shurly & Derrett, Ltd., Toronto.

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Brantford Cordage Co., Ltd., Brantford, Ont.

TWINES, cotton

Hamilton Cotton Co., Hamilton, Ont.

TWIST DRILLS

*John Morrow Screw and Nut Co., Ltd., Ingersoll.

*Pratt and Whitney Co., of Canada, Dundas, Ont.

*The Wilt Twist Drill Co., Ltd., Walkerville, Ont.

UNDERWEAR

Galt Knitting Co., Ltd., Galt, Ont.

UNDERWEAR, imperial

Kingston Hosiery Co., Ltd., Kingston, Ont.

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*Otterville Mfg. Co., Ltd., Otterville, Ont.

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*Kerr Engine Co., Ltd., Walkerville.

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*Jenkins Bros., Ltd., Montreal.

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*Ault & Wiborg Co. of Canada, Ltd., Toronto.

Berry Bros., Walkerville, Ont.

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*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

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*Sheldons, Ltd., Galt.

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*The Metallic Roofing Co. of Canada, Ltd., Toronto, Ont.

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The St. Hyacinthe Distillery Co., Ltd., St. Hyacinthe, Que.

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Tudhope-Anderson Co., Ltd., Orillia, Ont.

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Standard Clay Products, Ltd., St. Johns, Que.

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*The Steel Company of Canada, Limited, Hamilton.

WASHERS, fibre

*Beveridge Paper Co., Limited, Montreal.

WASHERS, plate or wrought

London Rolling Mill Co., Ltd., London, Ont.

WASTE PAPER BASKETS AND ALL RECEPTACLES, fibre

*Beveridge Paper Co., Limited, Montreal.

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Factory Waste and Metal Co., Montreal, Que.

*Scythes & Co., Ltd., Toronto.

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Benjamin Moore & Co., Ltd., Toronto.

*Beveridge Paper Co., Limited, Montreal.

*Paterson Manufacturing Company, Toronto and Montreal.

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

WEBBING, elastic
Hamilton Cotton Co., Hamilton, Ont.

WEBBING, non-elastic
Hamilton Cotton Co., Hamilton, Ont.

WELL-DIGGING TOOLS AND MACHINERY
*Ontario Wind Engine & Pump Co., Ltd., Toronto.

WHEELS
*Canadian Car & Foundry Co., Ltd., Montreal, Que.

Wheels, corundum
*Canadian Hart Wheels, Ltd., Hamilton, Ont.

WHEELS, emery
*Canadian Hart Wheels, Ltd., Hamilton, Ont.

WHEELS, fibre
*Beveridge Paper Co., Limited, Montreal.

WHEELS, propeller, iron and steel
*Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.

WHEELS, turbine, water
*Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.

WHEELS, water (impulse type)
John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.

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Oil Well Supply Co., Ltd., Petrolia, Ont.

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Lay Whip Co., Rock Island, Que.

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*Hiram Walker & Sons, Ltd., Walkerville, Ont.

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Coniagas Reduction Co., Ltd., St. Catharines, Ont.

WHITE LEAD
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*Goold-Shapley-Muir Co., Limited, Brantford, Ont.
*Ontario Wind Engine & Pump Co., Ltd., Toronto.

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*The Steel Company of Canada, Limited, Hamilton.
*Eugene F. Phillips, Electrical Works, Ltd., Montreal.
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*Canada Wire & Iron Goods Co., Hamilton.
C. H. Johnston & Sons, Ltd., Montreal, Que.

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*Eugene F. Phillips, Electrical Works, Ltd., Montreal.

WIRED GLASS
*Metallic Roofing Co., Ltd., Toronto.

WIRE GUARDS
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C. H. Johnston & Sons, Ltd., Montreal, Que.

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*Northern Electric Co., Limited, Montreal.
*Eugene F. Phillips, Electrical Works, Ltd., Montreal.

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WIRE, weatherproof
*Northern Electric Co., Limited, Montreal.
*Eugene F. Phillips, Electrical Works, Ltd., Montreal.

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*Canada Wire & Iron Goods Co., Hamilton.
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WOOD PRINTERS
Barchard & Co., Ltd., Toronto.

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La Cie de Pulpe de Chicoutimi, Chicoutimi, Que.

WOOD SPLIT PULLEYS
*Dodge Mfg. Co., Ltd., Toronto.
*The Goldie & McCulloch Co., Ltd., Galt, Ont.

WOOL
*H. V. Andrews, Toronto.

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Rosamond Woollen Co., Almonte, Ont.

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*The Thompson & Norris Co., of Canada, Ltd., Niagara Falls, Ont.

WRAPPERS, waterproof paper and twine reinforced
*Beveridge Paper Co., Limited, Montreal.

WROUGHT IRON PIPE
*The Steel Company of Canada, Ltd., Hamilton.

WROUGHT PIPE
*The Steel Company of Canada, Ltd., Hamilton.

YARNS, cotton
Hamilton Cotton Co., Hamilton, Ont.

ZINC, electrical
*The Canada Metal Co., Toronto.

*For Display Advertisement see Index, Page 1221

ARE YOUR STEAM PIPES INSULATED?

IF NOT YOU ARE BURNING MONEY

A GOOD COVERING pays for itself in one Season, and is a revenue producer indefinitely. **WE HAVE IT** The Best is the Cheapest

EUREKA MINERAL WOOL & ASBESTOS COMPANY

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You have probably been reading the vigorous advertising of Dodge Wood Split Pulleys—in which figures have been used in an interesting way—to tell of the greater efficiency of these Pulleys as compared with Metal Pulleys.

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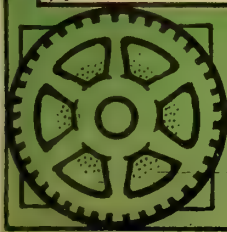
J. J. GIBBONS, LIMITED

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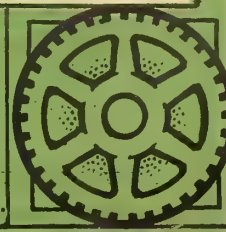
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HEAD OFFICE

..... BRANCH OFFICES,

• TORONTO •

MONTREAL, HAMILTON, WINNIPEG, VANCOUVER, HALIFAX, QUEBEC.



ABRASIVES

*Made in
Canada*

Users of abrasives of all kinds are invited to investigate our facilities and service. We have installed in Hamilton a plant for the production of

*A High-Grade
Artificial Corundum*

CORALOX

*All inquiries will receive
our immediate attention*

D. A. BREBNER LIMITED

Factory: HAMILTON

Head Office: 58 King St. West, TORONTO

AUTOMOBILE PARTS
DROP FORGINGS



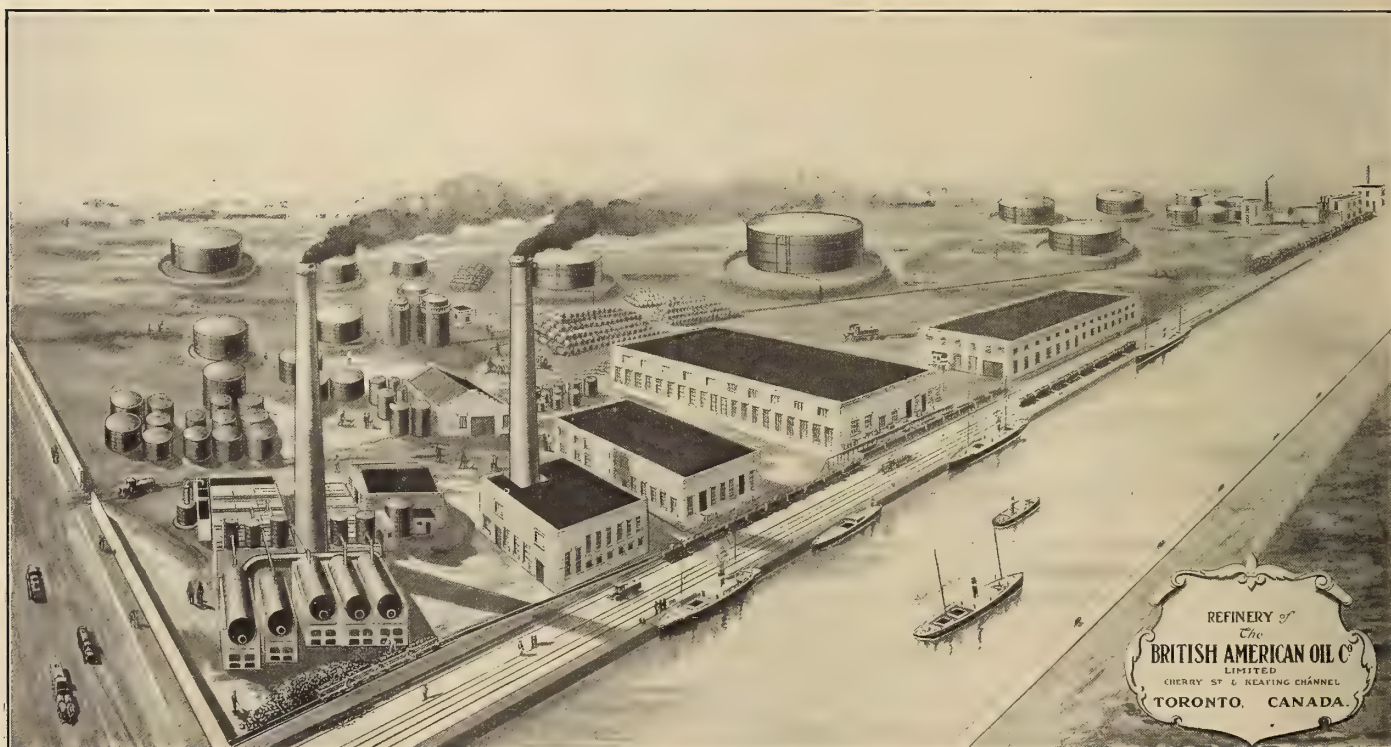
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We are equipped to handle large forging contracts.
This expansion also increases our stamping facilities.
We stand by our Motto: Quality and Service.

SHEET METAL WORK
GENERAL STAMPINGS

DOMINION FORGE & STAMPING CO., LIMITED
Walkerville - Ontario



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WINDSOR, Etc.

Why did you pick up that coin from the street? Easy money, wasn't it?

You can pick up coin just as easily and far more of it by having Dart Union Couplings used for making the pipe connections in your plant. This is an absolute fact. Your jobber sells them.

DART UNION CO., Ltd.
TORONTO

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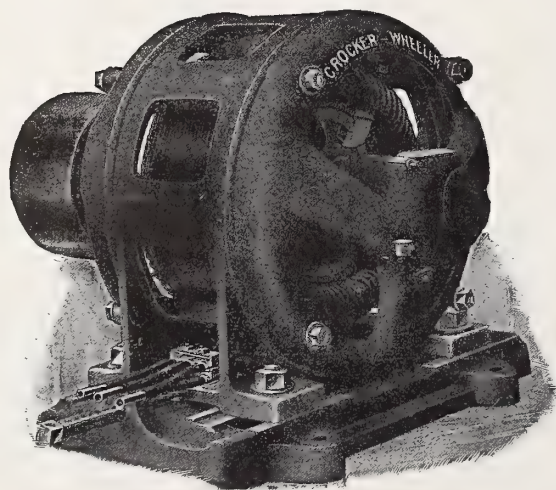
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You Need The PRESTOPHONE

Any manufacturer who has ever felt the need of a thoroughly efficient factory telephone system should get acquainted with the Prestophone.

This is an all-Canadian system, designed and manufactured right here in Canada, and it is equal in every respect to any system of the kind made anywhere in the world.

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Prestophone
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Old heating equipment changed to Dunham System.
New building also equipped with Dunham Traps.

The DUNHAM VACUUM HEATING SYSTEM

THE TIME to think about changing your Heating System to an efficient plant is NOW.

The annoyances and troubles of your present heating equipment are fresh in your mind.

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To ensure heating efficiency, comfort and economy in future the installation of DUNHAM RADIATOR STEAM TRAPS on each radiator will effect immediate results. Let us advise with you on your heating problems.

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FOR Shrapnel and
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ON hard, tough shell steel, solid taps are too expensive as the excessive wear quickly puts them below gauge size.

The simple adjustment on the tap, shown in our cut, was gotten out to overcome the effect of this excessive wear and to provide an economical substitute for the expensive chaser tap.

The accuracy to size and form is easily maintained and the life of the tool prolonged far beyond that of a solid tap at a comparatively small advance in price.

We can supply them for all tapping operations on Shrapnel and H.E. shells to 4.5" diameter.

Ask for our list and prices of Shell Tools
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If you have not received our No. 8 catalogue yet, we have one for you.

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723 Drummond Bldg.

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This Equipment is
all New, Modern
and Heavy

Write or wire our
nearest office for
particulars

EARLY DELIVERY

6", 8"
and
9.2
HIGH
EXPLOSIVE
SHELLS

THE JOHN BERTRAM & SONS CO.
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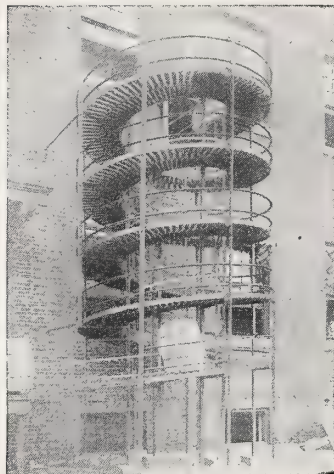
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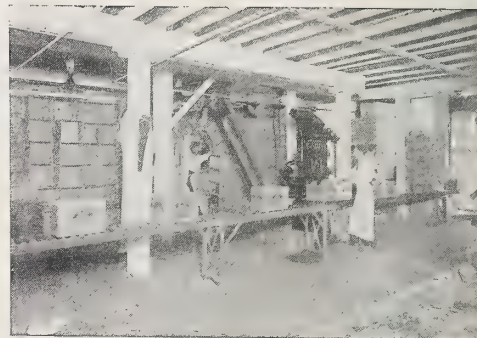




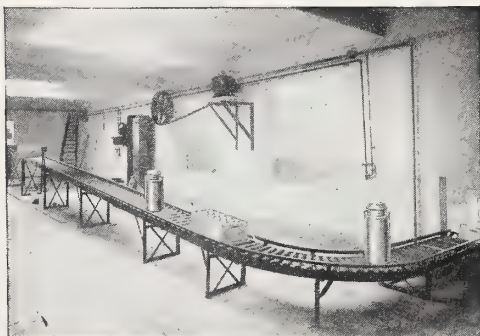
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GRAVITY CONVEYORS



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*Which Shall It Be?
A Bigger Pay Roll
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A MATHEWS CONVEYING SYSTEM

Getting your goods through the factory "somehow," and getting them shipped "somehow" does not spell efficiency.

As a first step write for our G.E. Catalogue.

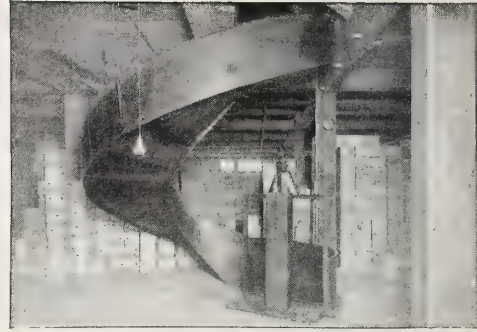
**Canadian Mathews
Gravity Carrier Co., Ltd.**
484 RICHMOND ST. W.
TORONTO - ONTARIO



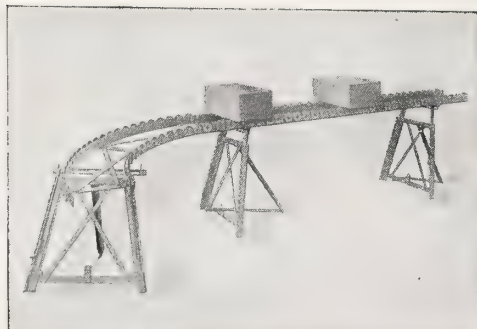
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GRAVITY CONVEYORS FOR
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STRAIGHT CHUTES

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Jenkins Bros. Type "K" Brass Gate Valves

withstand hard and constant use. They are very strong and being well built in every detail, resist wear and do not go wrong under pressure.

You will never find indifference to details, skimping of metal or laxity in finish in Type "K" Brass Gate Valves.

Our Diamond Trade-Mark protects you and guarantees you service and satisfaction.

Jenkins Bros.' Type "K" Brass Gate Valves

are approved for use in Ontario and the Western Provinces by the Depts. of Public Works.

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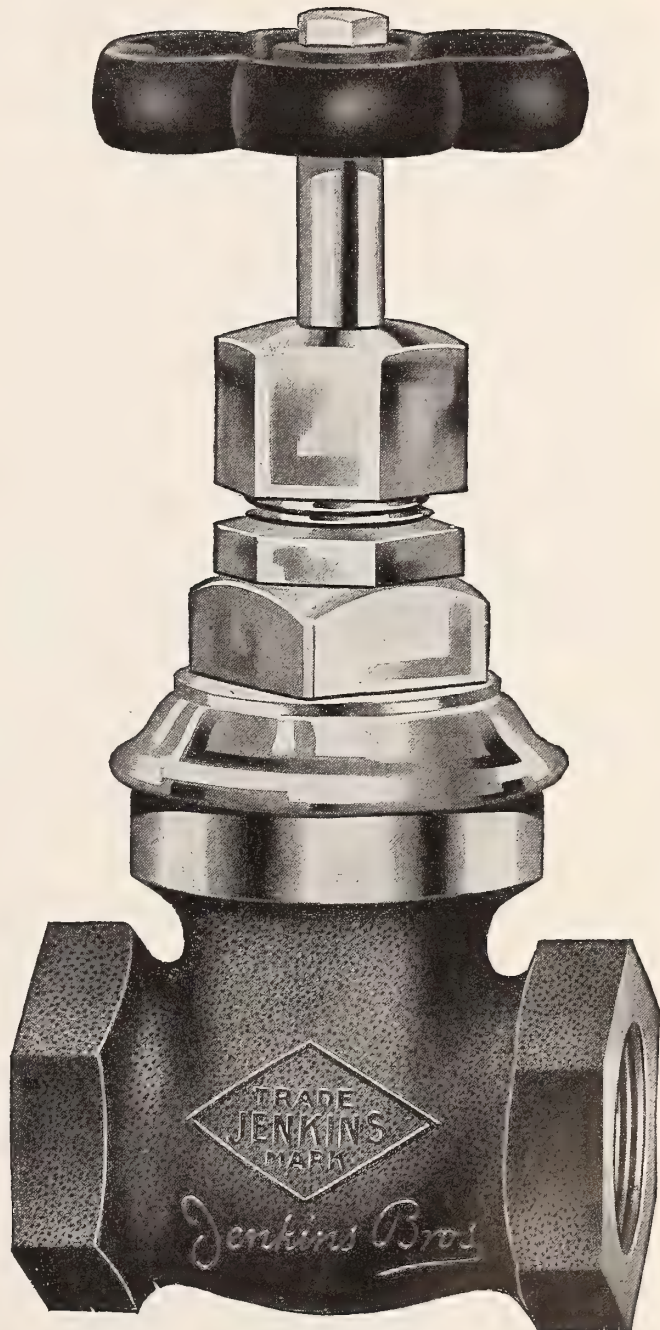
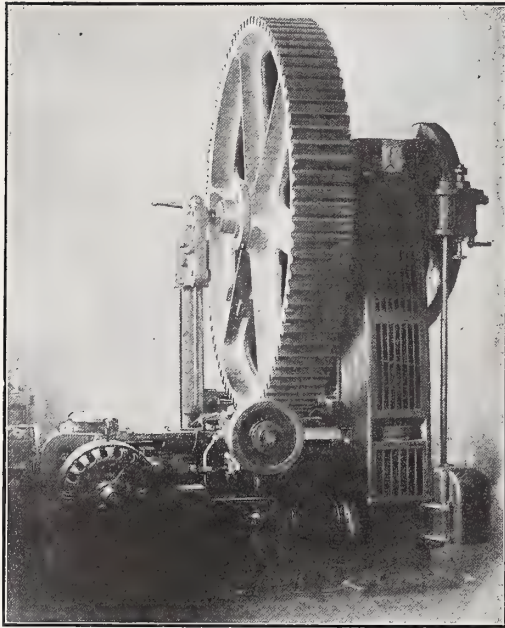


Fig. 300
TYPE "K"

STANDARD PATTERN
BRASS GATE VALVE, SCREWED

CUT GEARS



HEAVY GEARS OF LARGE DIMENSIONS
OR ONE SMALL PINION,
—OR QUANTITY PRODUCTION.

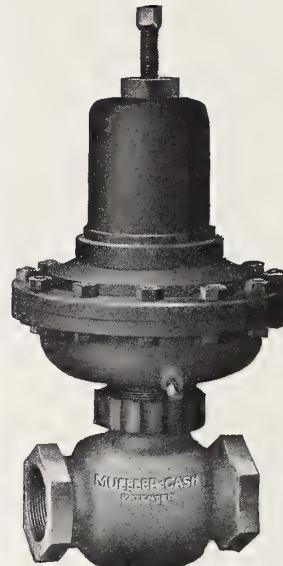
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VAN HORNE STREET **TORONTO**

SIMPLE, EFFECTIVE AND RELIABLE



No. 13100

The valve illustrated is our No. 13100. It is especially adapted for reducing medium and high steam pressures to intermediate and moderately low pressures. It has all the perfection of design and soundness of construction that have made the reputation of

Mueller Valves

All sizes from $\frac{1}{2}$ to 6 inch, inclusive, have bronze bodies and inside parts, phosphor-bronze diaphragms and oil-tempered steel springs.

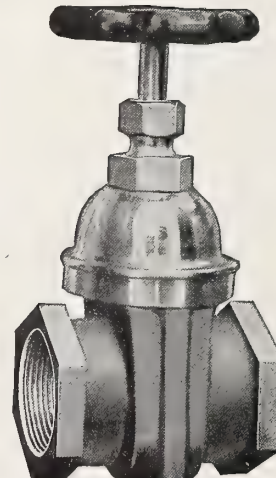
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H. Mueller Mfg. Co., Ltd.

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HERE IS A Brass Gate Valve

You will find it always made from High Grade Steam Metal and beautifully finished.

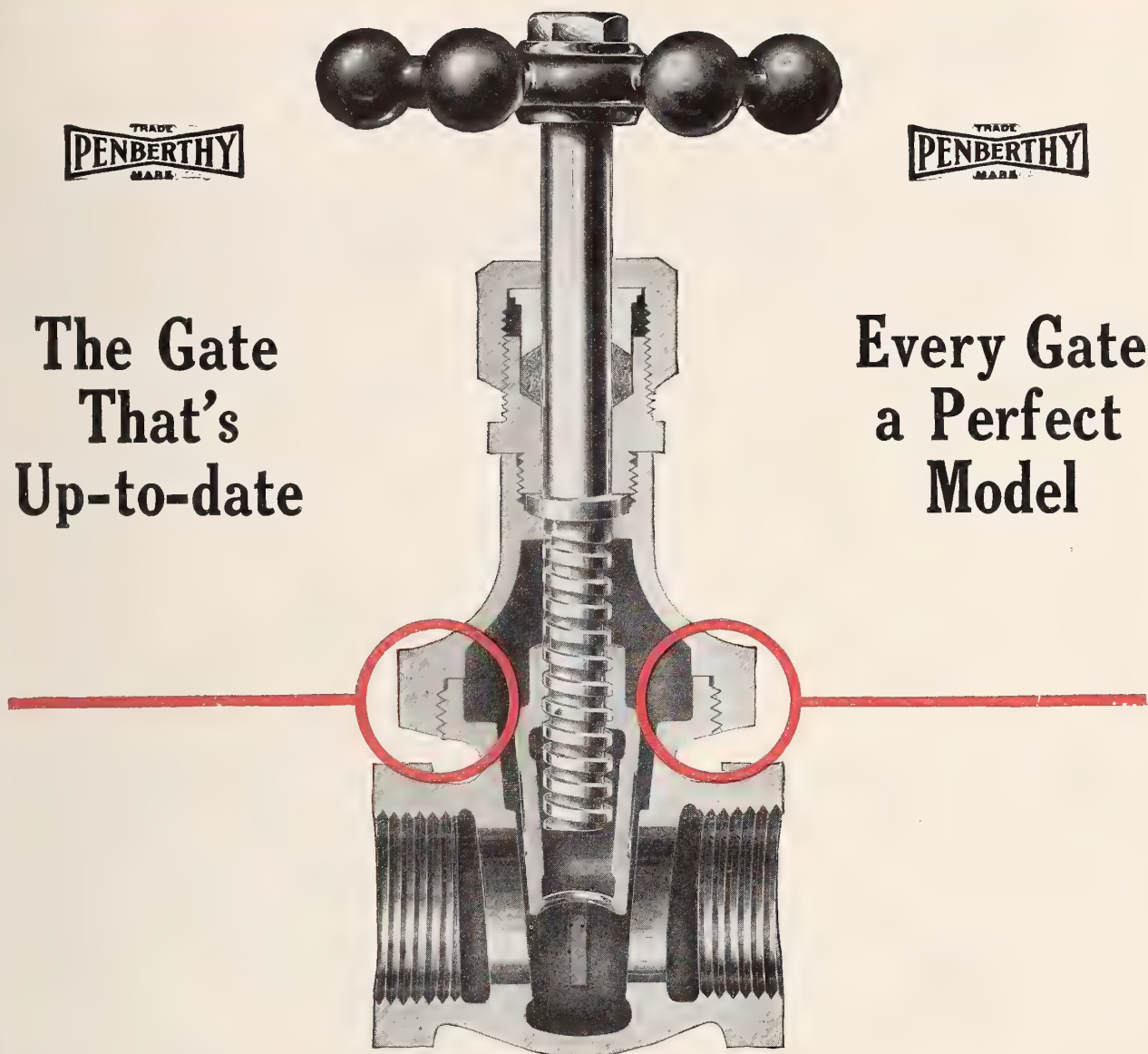
They are not made of one quality this year and another next. Always reliable and worth the price you pay.

The Kerr Engine Co., Limited

VALVE SPECIALISTS

WALKERVILLE

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That's
Up-to-date

Every Gate
a Perfect
Model

THE NEW BRASS GATE VALVE

With the Reliable

OUTSIDE BONNET CONSTRUCTION

(See Illustration Above)

Registered and Approved

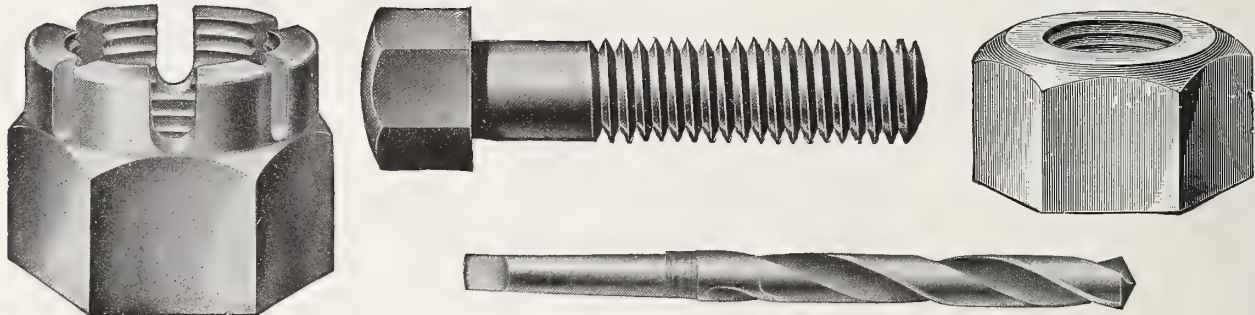
Solid Wedge Disc, Packing Gland Follower, High-Grade Steam Metal
Design and Workmanship Unequalled Anywhere

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High-grade Products

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Morrow Drills Excel in Efficiency

Morrow Drills are Made in Canada

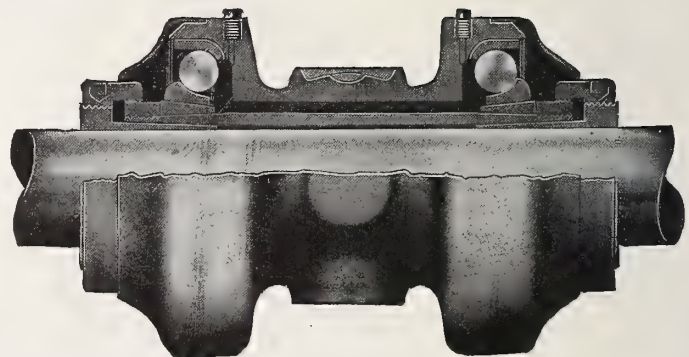
YOU CAN INCREASE YOUR POWER WITHOUT INCREASING THE SIZE OF YOUR POWER PLANT

Your present line shafting is consuming from 15% to 60% of your power.

The Chapman Double Ball Bearing will save this waste and turn it into productive energy.

They will also reduce your oiling and attention to a minimum.

They fit any adjustable hanger and the change can be made with but little delay to you.



In use in over 2,000 Canadian Factories

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An Uninterrupted Flow of Power

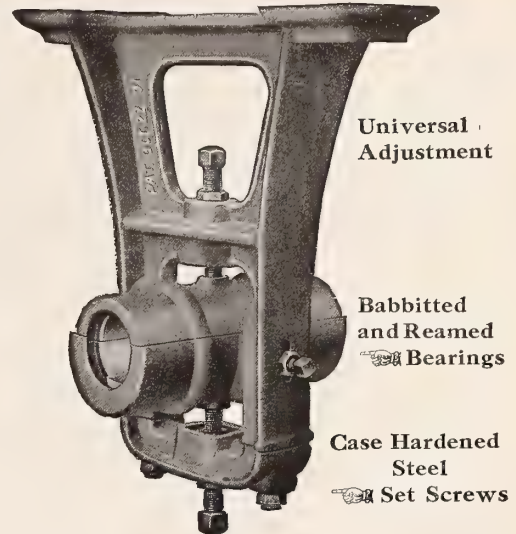
Some men seem to think if they have enough power at its source that all is well.

But it isn't—not by a long shot.

A big problem starts right there. Here it is. How to get the power delivered without unnecessary loss.

There is more than one solution. But the Bond Patent Universal Drop Hangers, Ring Oiling Ball and Socket will do as trim a job as you could desire.

They are rich with features that are sure to interest you. Write for our catalog and read about them.



Universal Adjustment

Babbitted and Reamed Bearings

Case Hardened Steel
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MADE IN CANADA

We are the originators of four point hangers. Insist upon having the ORIGINAL BOND HANGER

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ALEXANDRIA - ONTARIO

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*"Completely
Made in Canada"*



must be designed specially for munition work. Standard design furnaces will not stand up under the heavy twenty-four-hour service demanded by munition makers.

Hoskins Furnaces Gas, Oil and Electric

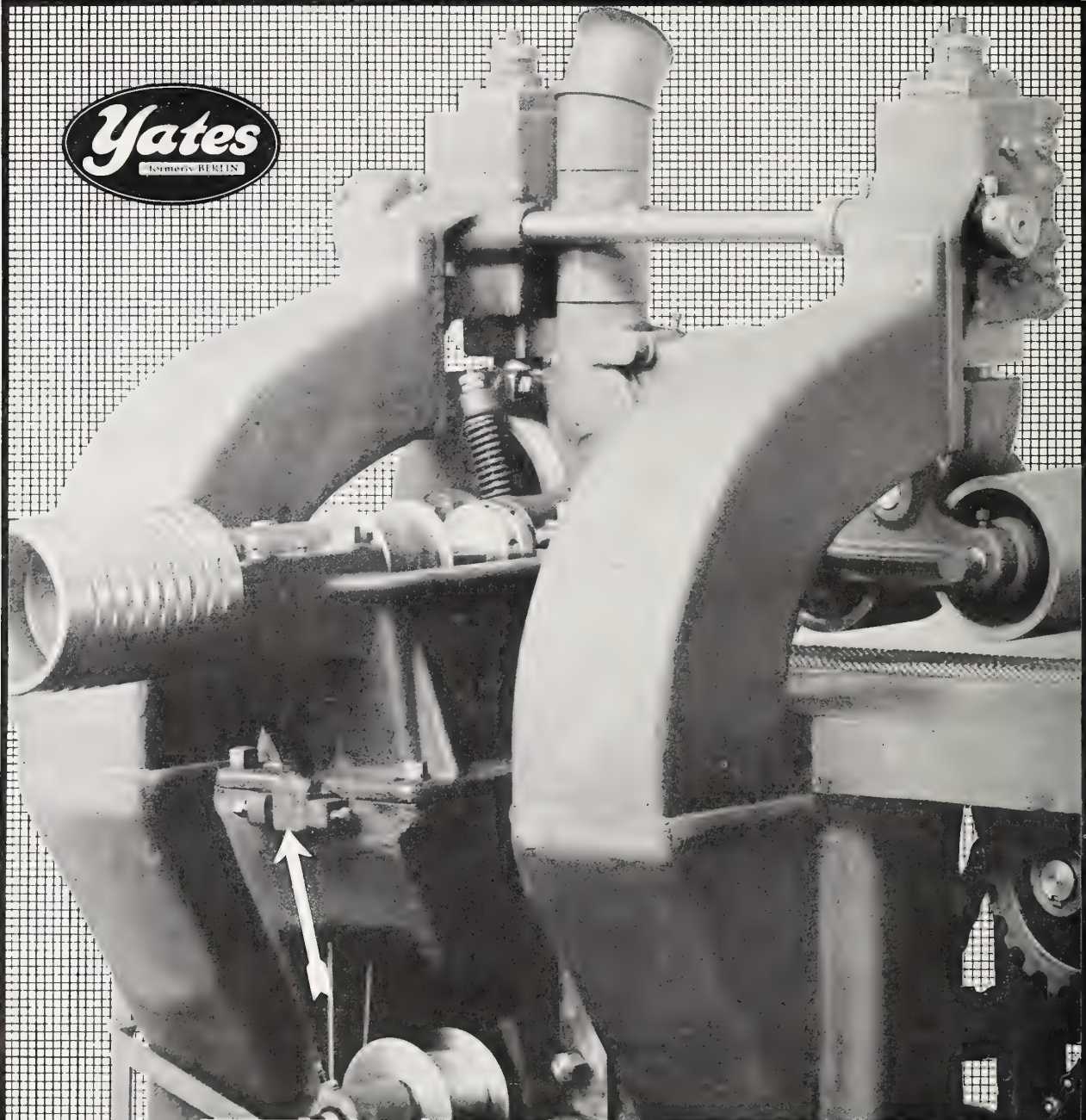
were designed for munition work and will STAND the STRAIN. On an average they are 50% heavier than the average furnace of the same capacity.

Canadian Hoskins Limited

*Electric, Gas and Oil Furnaces
and Pyrometers*

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NO VIBRATION HERE TO SPOIL THE SAW LINE

Powerful feed-roll supports and special adjustment for the saw arbor absolutely prevent it. This original and exclusive feature is one great reason why the Yates New Edging and Ripping Saw economically saves the last inch of usable lumber from "mill run"

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Has an Automatic Chain Feed

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U.S. Plant : Beloit, Wis.

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Twenty-Three
Years' Experience

"Dunlop" Means
Truly-Canadian

Dunlop Mill Fire Hose O.K'd by the Underwriters

Here is one of the greatest compliments ever paid to a manufacturer of Mill Fire Hose in Canada:

The Underwriters' Laboratories, Inc., Chicago, make it known that Dunlop are authorized to use the Underwriters' label of approval on Dunlop Underwriters' Mill Fire Hose (Cotton Rubber Lined).

You can understand the wonderful signifi-

cance of this "O.K." to the Canadian manufacturer and mill man requiring fire hose.

To purchase Mill Fire Hose (Cotton Rubber Lined) without investigating the surpassing merits of Dunlop make—approved by the Underwriters—a verdict money cannot buy—is to deny yourself all that a Mill Fire Hose can possibly represent in efficiency because the great critics in effect say: "Dunlop represent Leadership."

Quality Perpetually Repeated—Dunlop Water Hose

In Water Hose, "Hercules" and "Peerless" take front rank because for years they have kept up a "repeat" on quality that even

their best friends did not think possible in any brand of Hose. We recommend "Hercules" for extra heavy service.

"Made to Work, Not to Look at"—Dunlop Steam Hose

In all the provinces you will come across Dunlop Steam Hose "on the job." The requirements are what are usually styled "extra

hazardous," but Dunlop "Gibraltar" and Dunlop "Peerless" Steam Hose are "made to work, not to look at."

If your plant is in need of Hose, it is not too late to learn wherein "Dunlop" excels.

Dunlop Tire & Rubber Goods Co., Limited

Head Office and Factories
Toronto

Branches in the Leading
Cities

WATER

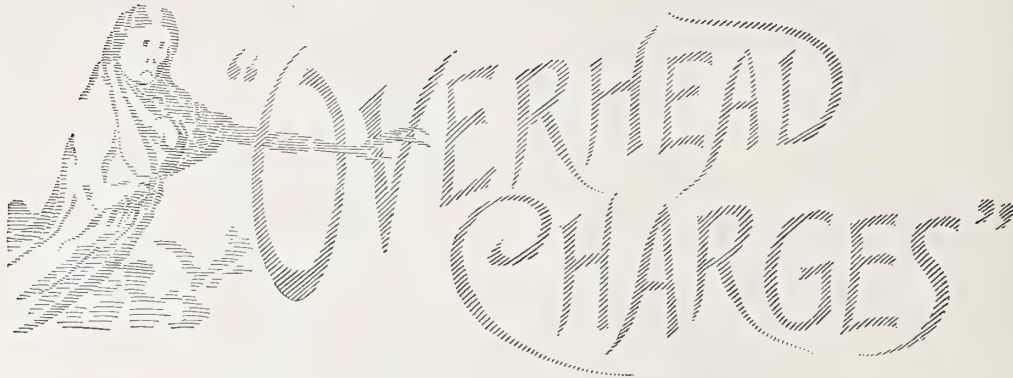
STEAM

FIRE

J. 29



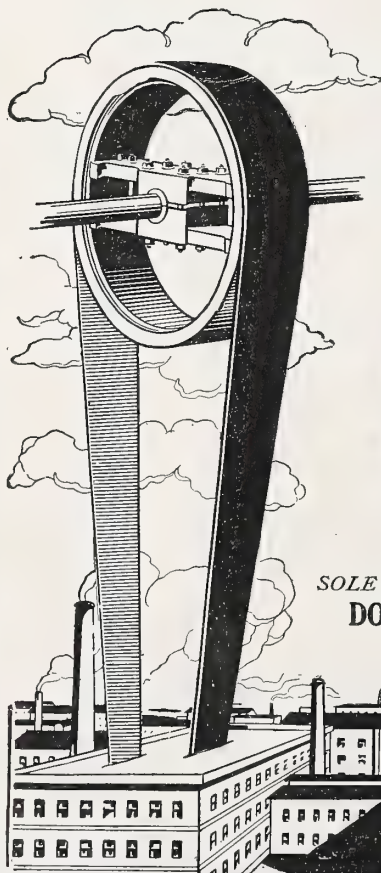
That grim spectre—



RELENTLESS and ever present in Factory operation is the spectre of Overhead Charges.

Its ravages among the profits of your business must be constantly checked. One of its most active lieutenants is *Power Wastage*—caused by belt slippage over metal pulleys. Many thousands of dollars are wasted yearly in Canadian Factories and workshops where Wood Pulleys would save 50% of the waste.

Actual scientific tests show that on the average you can buy *four* Dodge Wood Split Pulleys with the money you now lose by waste from one Metal Pulley. Therefore we appeal to Presidents of Companies, Managers and Superintendents of Factories, Engineers and others, to personally supervise the buying of their pulleys and specify always—



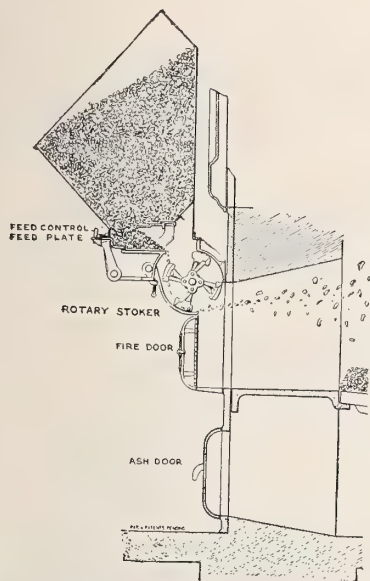
DODGE

WOOD SPLIT PULLEYS

SOLE MAKERS:

DODGE MANUFACTURING CO. Limited, TORONTO

REASON WITH US FOR A MOMENT!



The stoker mechanically feeds and uniformly spreads any type of fuel in a light, continuous stream over the entire surface of your present fire grates.

With coal and labor at the present price, can you afford to operate the boiler room—the heart of your plant, under any other than the most economical conditions?

Why buy coal costing from \$8 to \$10 per ton, when you can get all the steam you want with fuel at about half the price?

Galt Sprinkler Stokers are Inexpensive, Smokeless and Efficient

They will burn low-priced coal, including the screenings from anthracite, bituminous, coke and lignite fuels, and when used in conjunction with our modern Automatic Turbo-Blower will double the capacity of the boilers, should that be necessary.

What We Claim

That we will furnish indisputable facts and figures to any manufacturer or others that we can, by using cheap fuel, effect savings in the cost of producing steam varying from 15% to 30% or over, depending on conditions and the price of coal.

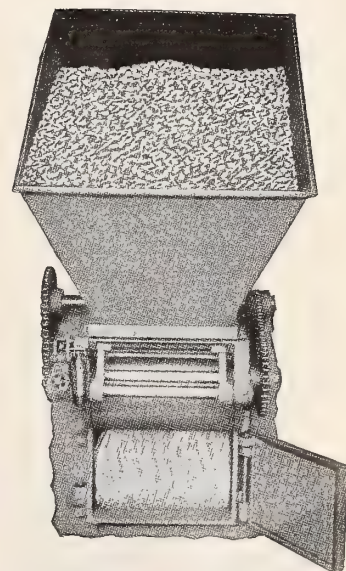
A Large Montreal Plant Saved 50,000 Dollars Last Year

By utilizing low-priced fuel. Could your conditions be improved upon? The service of our combustion engineer is at your command, free of all cost—send for him. It places you under no obligation.

Galt Sprinkler Stokers can be installed ready for use on any type or size of boiler in from 8 to 10 hours and without alteration to your present boiler fronts and furnace settings. This is an important point to be considered regarding stokers.

The British, French and other navies use Sprinkler Stokers—there must be a reason.

Ask for our 40-page illustrated catalogue.



Allows free access to the furnace at all times.

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is one that yields prompt and steady returns. And on this basis many of Canada's progressive manufacturers consider there is a no better investment for a steam power plant than the

Jones Underfeed Stoker

It begins earning money for you from the hour it is installed. These earnings consist of a saving in fuel consumption, a decrease in the labor of firing boilers, and an increase of boiler efficiency.

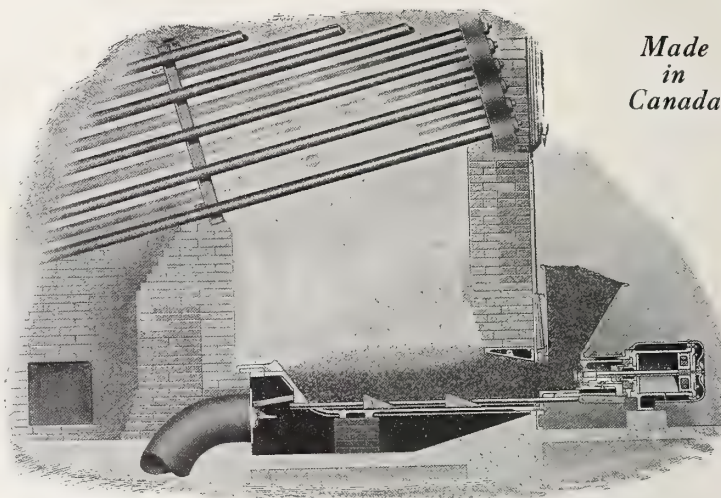
Actual results prove that the Jones Underfeed Stoker effects a saving varying from 15% to 25% on fuel costs wherever it is installed.

You cannot afford to ignore any fact that has a bearing on economy. Look into the claims we make for the Jones—every claim we make we back up with conclusive proof.

Write for Full Particulars

JONES
Underfeed Stoker Co.

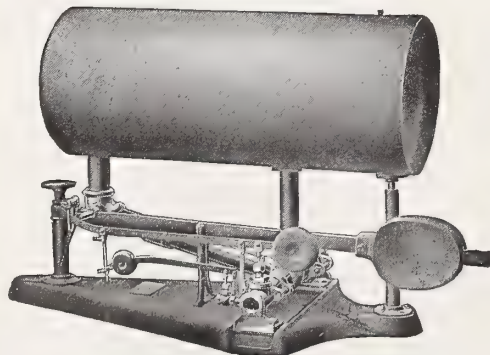
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GETTING SOMETHING FOR NOTHING

*Costs You
Nothing
Because the
Coal Man
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Equipment*



DO YOU WANT to know how to turn a poor heating system into one of the most efficient without burning one ounce more fuel?

Hundreds of steam users have taken advantage of the Free Consultation Service back of the

Morehead
—Back to Boiler—
SYSTEM

and profited (many write us) beyond their highest expectations.

Consult us freely about your heating and drainage troubles. You will receive—without obligation—frank, practical advice based on twenty-five years' experience in the solving of such problems.

If you haven't time to dictate a letter, send us memorandum notes of your steam conditions.

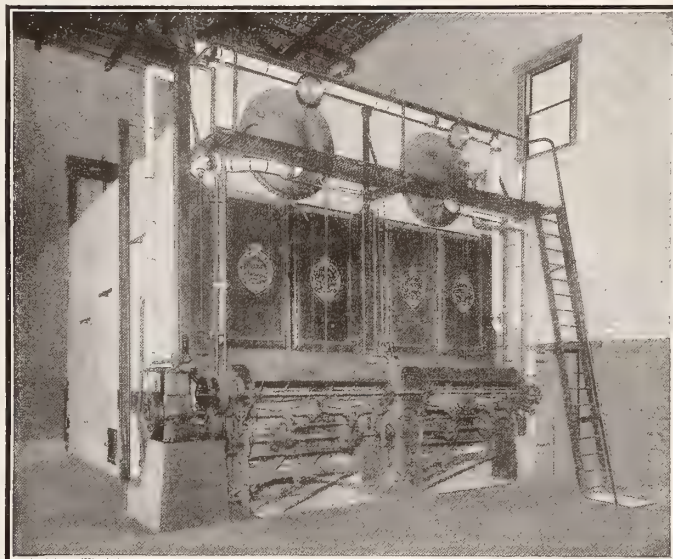
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Dept. "K"

Woodstock, Ontario, Canada

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POWER EQUIPMENT



2 G. & McC. Co. Sectional Water-Tube Boilers at
St. Boniface Hospital, Winnipeg, Man.

CONTINUOUS SERVICE IN YOUR POWER PLANT MEANS UNINTERRUPTED PRODUCTION

And in these days of rush such production is of the greatest importance. The prime factors in this continuity of operation are your Engines and Boilers. G. & McC. Co. Power Equipment is designed and built as a means to supplying this much-to-be-desired

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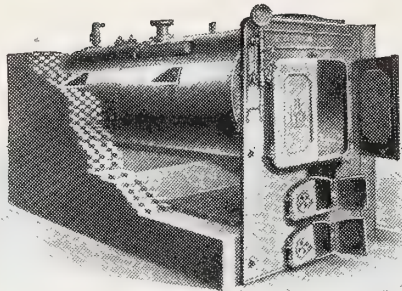
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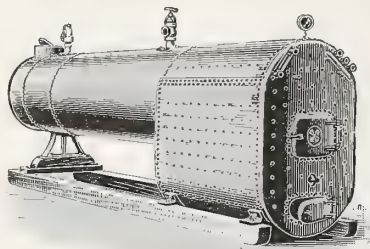
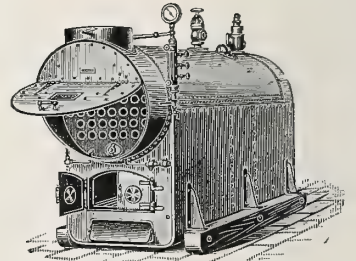
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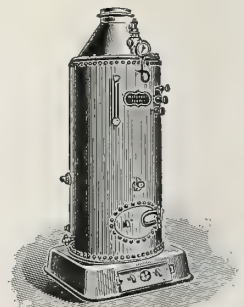


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**Storage
Tanks &
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Send us your specifications for steel tanks and bins—we build them in all sizes and for every use.

Also gas tanks, pressure tanks, air reservoirs and steel bucket or screw elevators.

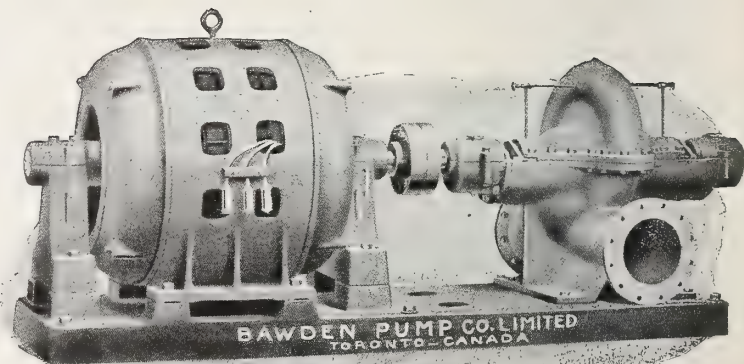
We have a reputation for honest, thorough workmanship—you'll find it maintained in every piece of equipment we turn out.

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The Waterous Engine Works Co., Ltd. BRANTFORD CANADA

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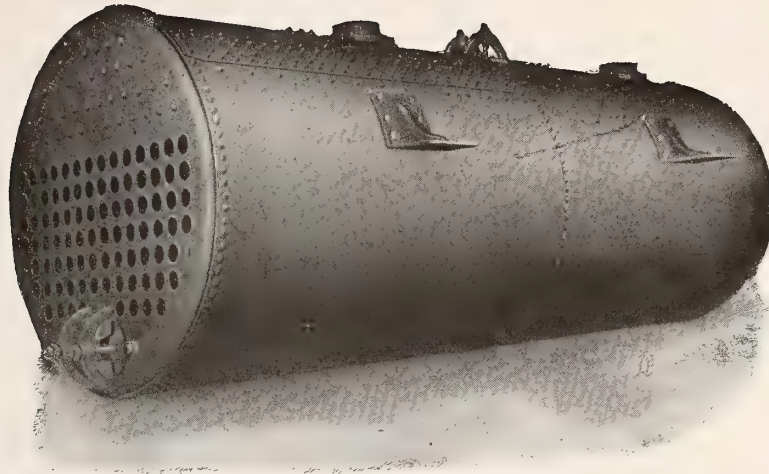
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Pumps for all purposes.

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Equal to any Pump in the World*

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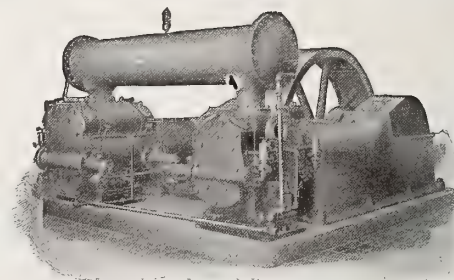
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Moderate in cost. Built to successfully stand severe and continuous service. Full range of sizes and types.

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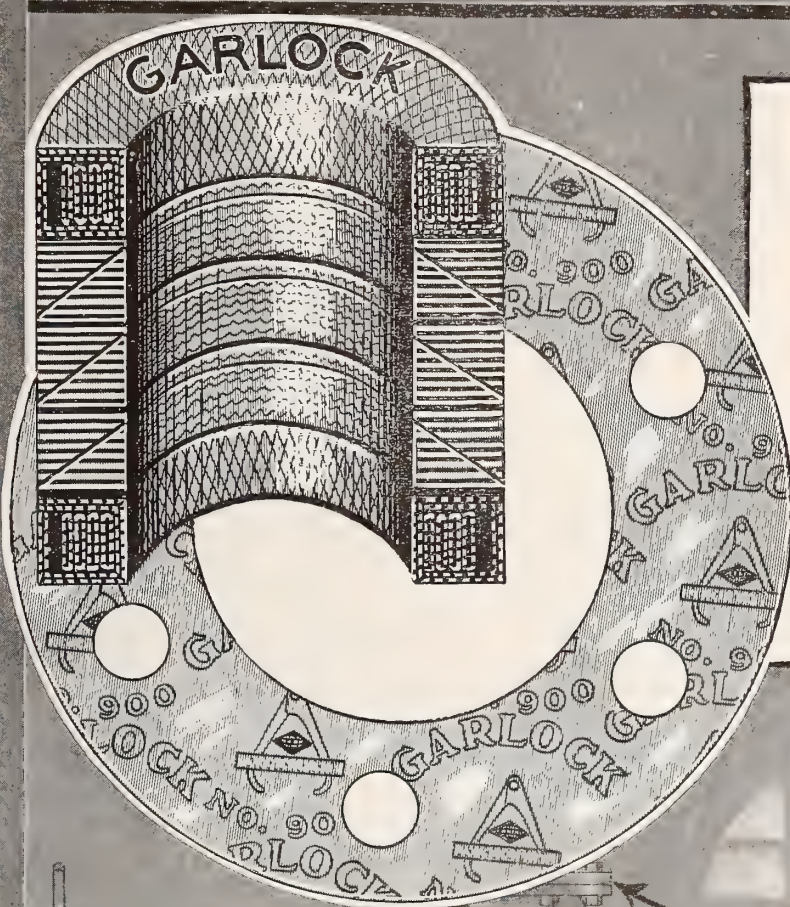
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Pointers on a Well-Packed Engine

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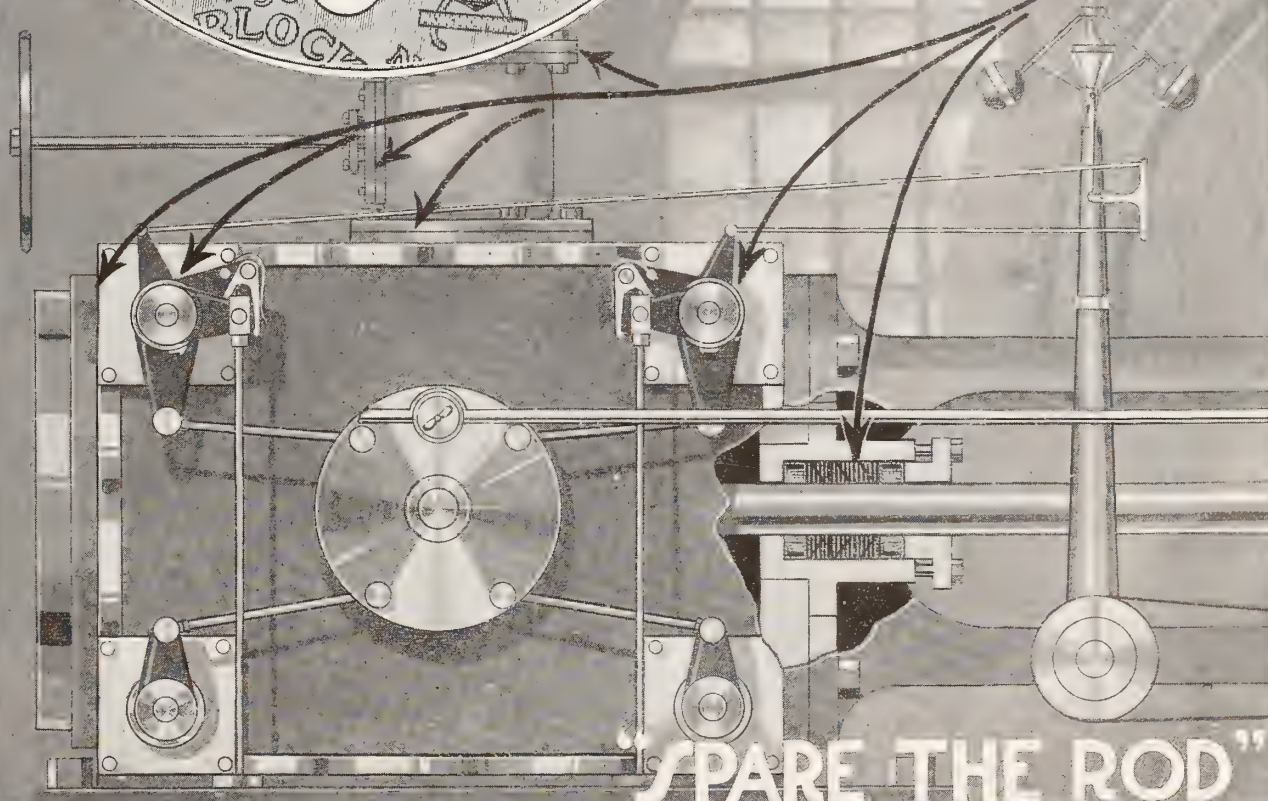
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Lay a roof on your factory
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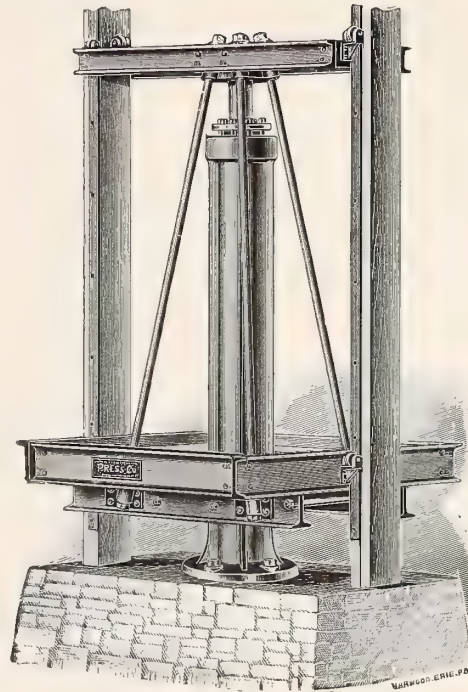
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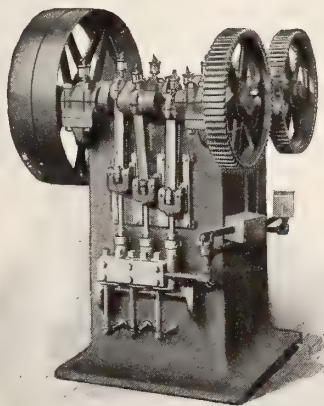
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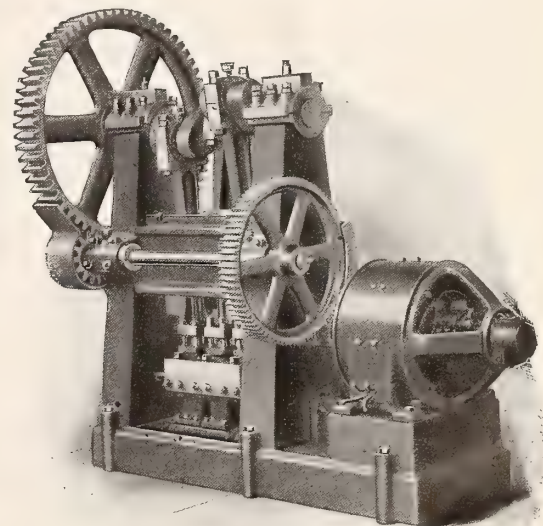
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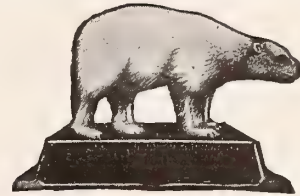
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Our Record with Peters Cartridge Co.

Nov. 1915. Paper Shell Factory	\$195,000.00
Jan. 1916. Annealing Bldg.	10,000.00
Mar. 1916. Power Plant	150,000.00
June 1916. Imhoff Tank	5,000.00
Mar. 1917. Packing Case Bldg.....	175,000.00
Mar. 1917. Shot Tower.....	<u>100,000.00</u>

Total value of Contracts.....\$635,000.00

We always try to carry on each contract in such a manner as will ensure us the next contract which the owner may have to let.

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Total Assessment, 1906.....	\$ 7,047,267		Bank Clearings.	
" " 1916.....	68,072,210	1910	\$50,739,159	
Taxable Assessment, 1906	\$ 5,889,734	1915	87,122,611	
" " 1916	50,969,645	1916	124,349,589	
Post Office Business Returns.			Customs Receipts.	
1914.....	\$2,746,154	1915.....	\$ 653,915.00	
1915.....	3,064,312	1916.....	1,505,019.21	
1916.....	6,377,986			

SURPLUS OF ASSETS OVER LIABILITIES, SIX AND A HALF MILLIONS

Fire loss, 1915	\$29,721.49	1916 (11 months)	\$10,561
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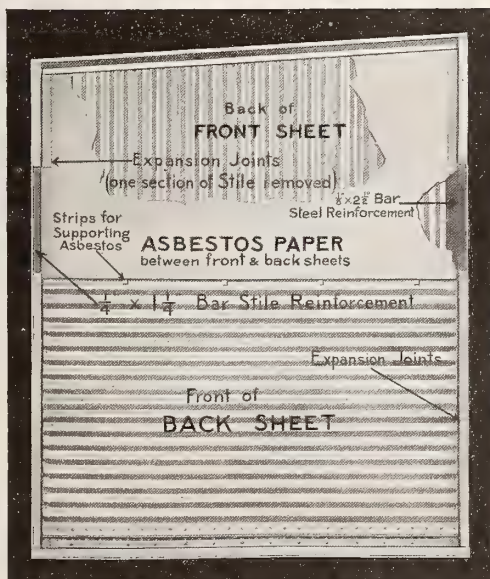
REGINA is noted as an industrial and distributing centre ; has a model industrial section, so planned and laid out as to incorporate all possible advantages for your business.

This district is served by spur tracks from the trans-continental railways ; has pavements, sewers, water, electric light and power, street railway services, etc. Sites in this district can be purchased at low prices by bona fide firms. The city owns in this district warehouse property valued at two million dollars. The municipal power plant supplies power for manufacturing at exceptionally low rates. Over a score of new business enterprises have been established in this district since the war started, among which are two of the largest concerns in Canada, who have invested here several millions.

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PEDLAR'S Saino ALL METAL FIRE DOOR



THE fiercest conflagration cannot warp them out of shape. Patent Telescopic channels and joints make that impossible. Should expansion or contraction occur, it must be along straight lines.

Two walls of corrugated steel, interlined with heavy asbestos, form the main structure. The resistance of the corrugations in one direction prevent the surrender of the other, and vice versa.

Pedlar's Saino Firedoor has the added advantage of expansion joints, insulation, asbestos covering, and non-conducting air currents to prevent the transmission of heat. An additional preventive against warping.

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Ormsby is a name close-coupled with modern fireproofing for factories.

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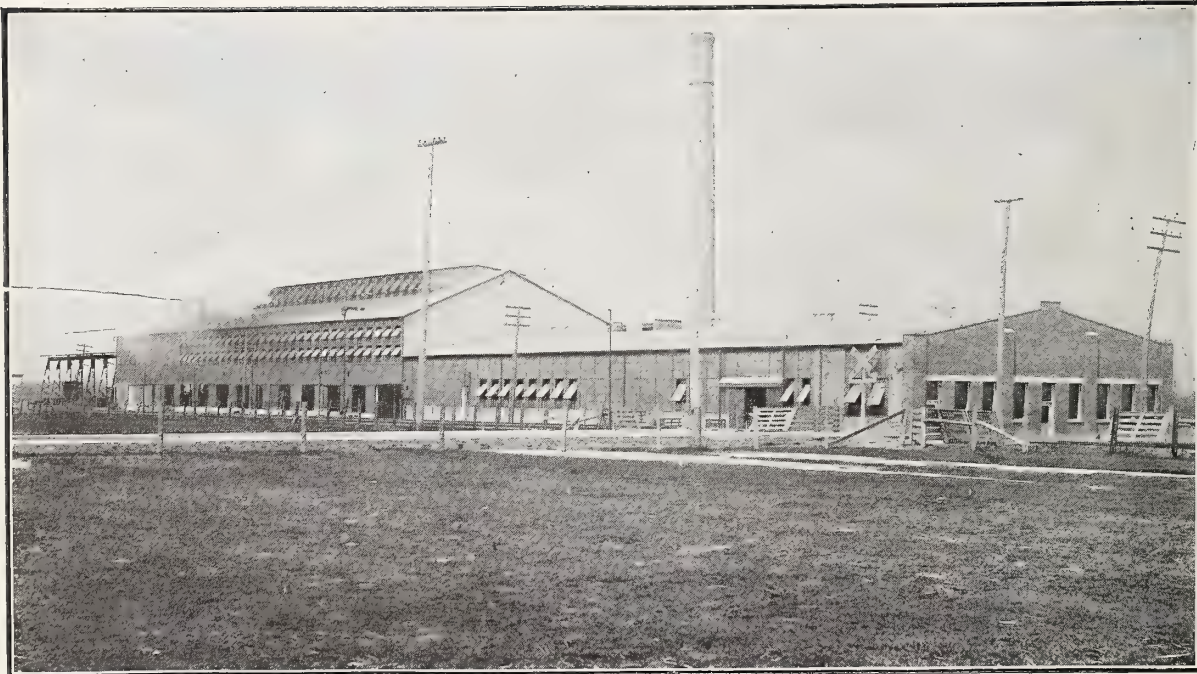
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**The Most
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Forge Plant
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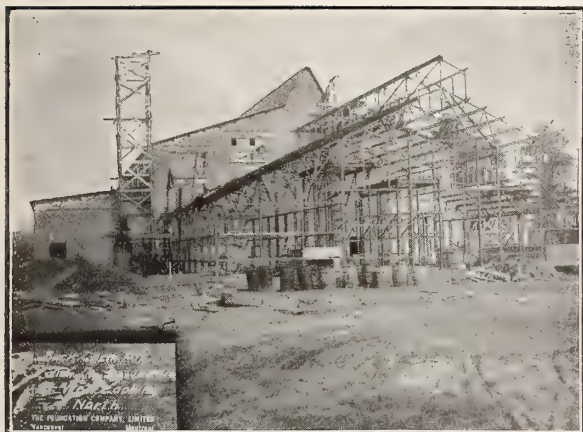
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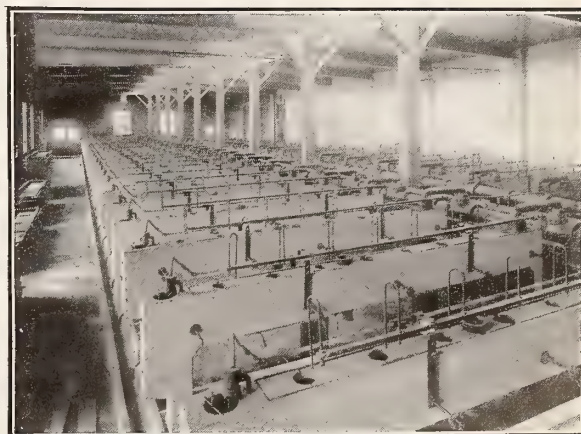
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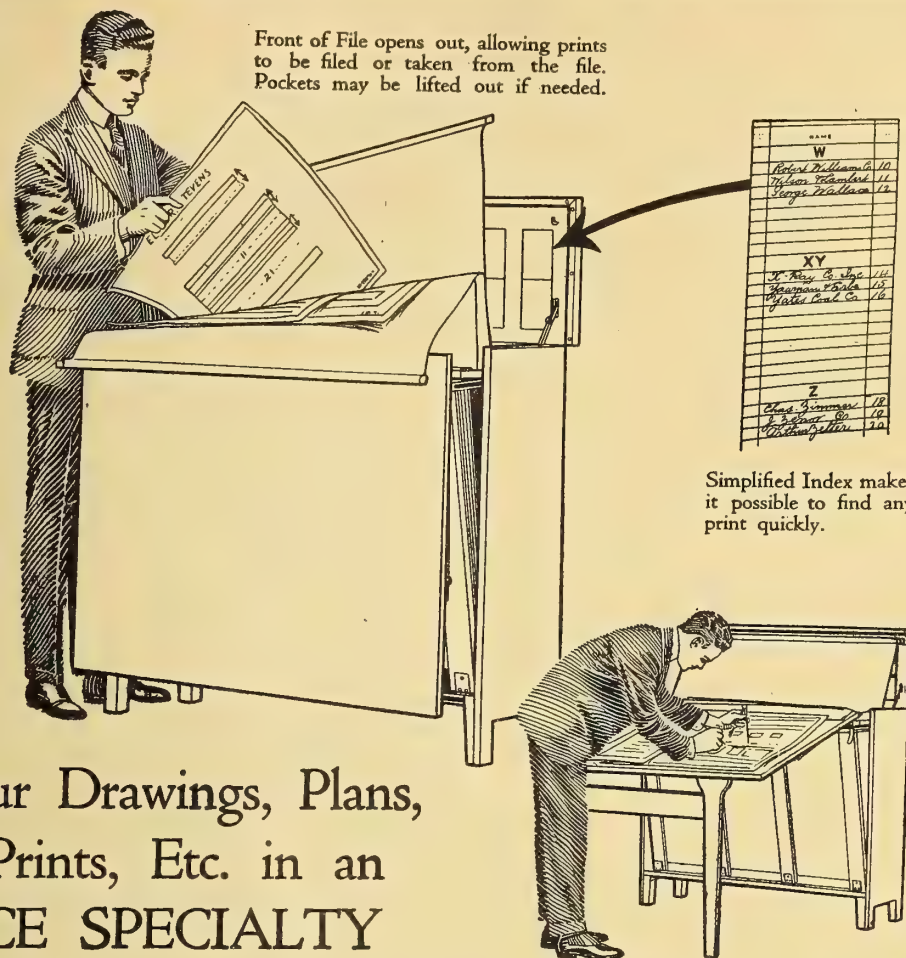


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Work from Iron, Steel
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ALTHOUGH an Office Specialty Mammoth Vertical File will hold a thousand big blue prints, properly indexed, it takes only about four square feet of floor space when closed.

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President and General Manager: H. N. ROBERTS

Secretary: J. P. BYRNE

Vice-President: OLAF E. GRANBERG

Assistant Secretary: M. B. ROBINSON

FINANCIAL STATEMENT, JANUARY 1, 1917

Assets		Liabilities	
Cash on hand and in Banks	\$15,317 14	Unearned Premium Reserve	\$102,229 75
Mortgage Loan	5,000 00	Other Liabilities	741 57
Stocks, Bonds and Debentures	284,057 12	Total Liabilities except capital	\$102,971 32
Other Assets	22,699 50	Capital paid up	\$100,100 00
		Surplus over all Liabilities	124,002 44
		Total surplus for Policyholders	224,102 44
	<u>\$327,073 76</u>		<u>\$327,073 76</u>

LIST OF SECURITIES OWNED BY THE COMPANY

Market Value December 31, 1916.

Debentures		Debentures	
City of Vancouver, 3½%, 1942	\$5,040 00	Amount brought forward	\$118,816 12
City of Vancouver, 4%, 1946	5,390 00	City of Medicine Hat, 5%, 1932-35	10,800 00
Town of Owen Sound, 4%, 1923	3,720 00	City of Toronto, 4½%, 1963	13,800 00
City of London, 4%, 1921	5,760 00	Province of Alberta, 4½%, 1924	28,500 00
Town of Maisonneuve, 4½%, 1946	8,300 00	City of Regina, 5%, 1929	9,500 00
Town of Westmount, 4½%, 1947	8,190 00	Province of Saskatchewan, 5%, 1925	9,900 00
City of Hamilton, Hospital Ex., 4%, 1915-19 ..	5,375 79	Dominion Government War Loan, 5%, 1925 ..	24,750 00
City of Kamloops, 5%, 1956	4,200 00	Dominion Government War Loan, 5%	4,950 00
City of Edmonton, School Dist. No. 7, 5%, 1915-38	10,340 33		
City of Saskatoon, School Dist. No. 13, 5%, 1921	19,400 00		
District of Burnaby, 5%, 1922	24,000 00		
City of Strathcona, 4½%, 1949	9,600 00		
City of Moose Jaw, 4½%, 1921	9,500 00		
Amount carried forward	<u>\$118,816 12</u>		<u>\$284,057 12</u>

The Policies of the Boiler Inspection and Insurance Company of Canada are guaranteed by the Hartford Steam Boiler Inspection and Insurance Company under a license granted by the Dominion Government for that purpose.

The Hartford Steam Boiler Inspection and Insurance Company

Head Office: HARTFORD, CONN.

President, CHAS. S. BLAKE

Vice-President, F. B. ALLEN

Secretary, W. R. C. CORSON

Chief Agent in Canada, H. N. ROBERTS

Head Office in Canada: CONTINENTAL LIFE BUILDING, TORONTO

FINANCIAL STATEMENT, JANUARY 1, 1917

Assets		Liabilities	
Cash on Hand and in Banks	\$305,800 09	Reserve for Unearned Premiums	\$2,738,563 68
Mortgage Loans	1,554,570 00	Other Liabilities	312,153 05
Real Estate	90,000 00	Total Liabilities except capital	3,050,716 73
Bonds and Stocks, market value	4,362,015 45	Capital paid up	\$2,000,000 00
Other Assets	492,902 21	Surplus over all liabilities	1,754,571 02
		Total surplus for Policyholders	3,754,571 02
	<u>\$6,805,287 75</u>		<u>\$6,805,287 75</u>

Total Surplus Assets for Security of Policyholders, Boiler Inspection and Insurance Co., \$3,978,573 46

BANK OF MONTREAL

ESTABLISHED 100 YEARS (1817-1917)

Capital Paid Up	- - -	\$16,000,000
Rest	- - -	16,000,000
Undivided Profits	- - -	1,414,423
Total Assets	- - -	365,215,541

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Assistant Gen. Manager, A. D. Braithwaite

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H. V. F. JONES
Ass't General Manager

CAPITAL PAID-UP, \$15,000,000
RESERVE FUND, \$13,500,000

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The Bank will make enquiries into the possibilities and requirements of markets abroad for exporters or importers who desire to extend their trade with British colonies or possessions. Owing to the large number of its correspondents and agents it has unusual facilities for this work.

S 57

THE ROYAL BANK OF CANADA

Incorporated 1869

Capital Authorized.....	\$25,000,000
Capital Paid Up	\$12,900,000
Reserve & Undivided Profits..	\$14,300,000
Total Assets.....	\$270,000,000

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C. E. Neill, General Manager
F. J. Sherman, Asst. Gen. Manager
W. B. Torrance, Superintendent of Branches

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ESTABLISHED 1875

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CAPITAL PAID UP \$7,000,000 RESERVE FUND \$7,000,000
PELEG HOWLAND, President E. HAY, General Manager

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made at all points in Canada and in foreign centres.

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Established 1865

Head Office, Winnipeg

Paid-up Capital.....\$5,000,000

Reserve Fund.....\$3,400,000

Total Assets over.....\$100,000,000

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who are reaching out for greater trade, over broader territory, the Union Bank of Canada offers a comprehensive banking service, complete and efficient. This service not only covers Canada, where we have over 305 Branches, but through the Foreign Exchange Department of our London (England) Office, and the Commercial Information Bureau established at that Branch, it offers valuable assistance to Canadian Manufacturers who are selling Overseas.

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6 Princes St., E.C.

Haymarket, S.W.

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Established in 1836

Incorporated by Royal Charter in 1840

Paid-up Capital.....\$4,866,666.66

Reserve Fund.....\$3,017,333.33

Head Office—5 GRACECHURCH STREET, LONDON

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St. James Street, MONTREAL

H. B. MACKENZIE, General Manager

Advisory Committee in Montreal

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This Bank has Branches in all the principal Cities of Canada, including Dawson, (Y.T.), and Agencies at New York and San Francisco in the United States. Agents and Correspondents in every part of the world.

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Drafts, Money Orders, Circular Letters of Credit and
Travellers' Cheques issued negotiable
in all parts of the world.

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The Merchants Bank of Canada

Head Office - MONTREAL

Capital Paid-up - - - \$7,000,000

Reserve Fund and Undivided Profits 7,250,984

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ESTABLISHED 1832

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UNITED STATES: Boston, Chicago, New York

CUBA: Havana

PORTO RICO: San Juan

JAMAICA: Kingston and 9 other points.

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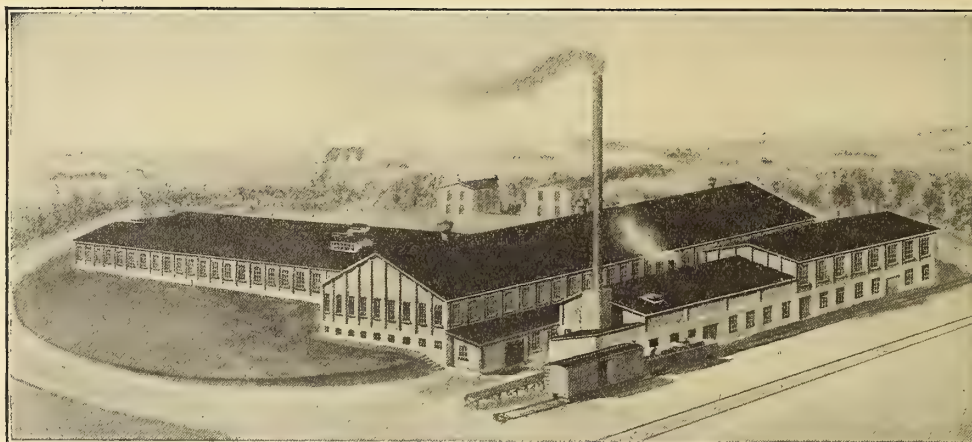
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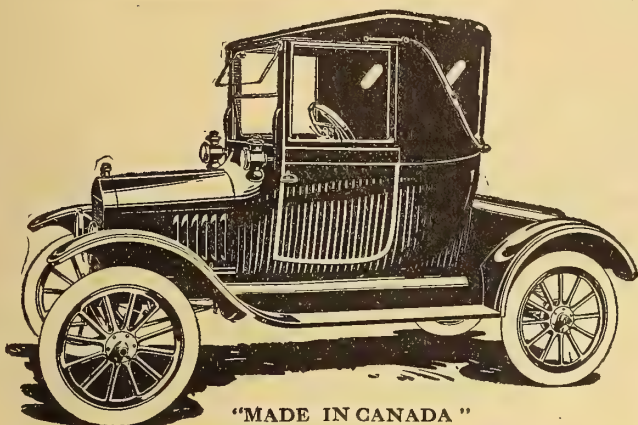
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A very superior solvent
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Made in Canada from
Canadian woods

BY

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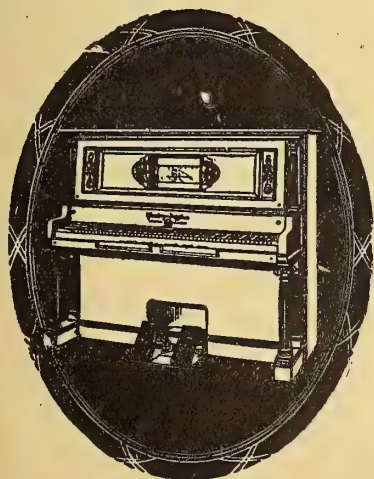
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Men forget business cares in the enjoyment of

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A GOURLAY-ANGELUS provides ANYONE with the ability to play ANY music artistically.

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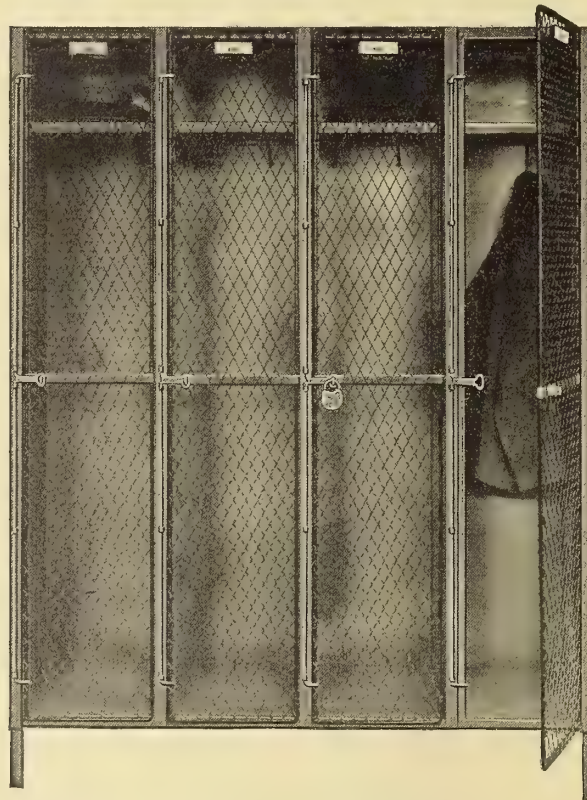
**GOURLAY, WINTER & LEEMING,
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Article Number One

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WE WANT TO TELL YOU ABOUT

Meadows' Metal Lockers

This and several subsequent issues of *Industrial Canada* will emphasize some of their exclusive features. We suggest that you pay particular attention to this series because some day you will be buying lockers for your own plant.



The illustration shows our No. 2124 Style of Locker. It was developed to suit the special requirements of the manufacturer and has most certainly made good.

Ample Ventilation.
Easy Inspection of Contents.
Strength and Rigidity.
Low Cost.

Our Catalog No. 9 will tell you more—write for it!

The GEO. B. MEADOWS, Toronto Wire, Iron & Brass Works Co., Ltd.
479 West Wellington St., Toronto, Canada

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MADE IN



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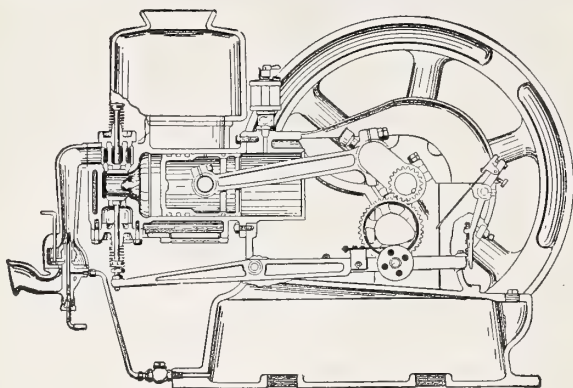
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BROWN'S COPPER & BRASS ROLLING MILLS LIMITED

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THESE Engines represent the very best type of Gasoline Engine construction. They have been developed to their high state of efficiency by those whose life work has been the designing and building of gasoline engines.

Their high efficiency, coupled with their economy of operation and durability, combine to make Massey-Harris Engines, without exception, the most reliable and satisfactory on the market to-day.

Made in a wide range of sizes, from 1½ to 20 horsepower, stationary or portable, hopper jacket or closed jacket.

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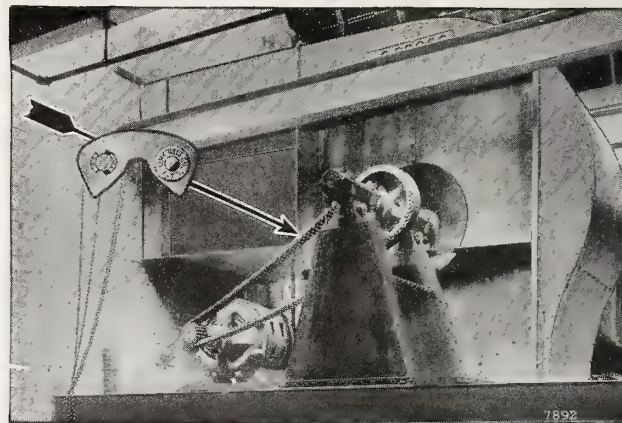
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Transmits Power
Without Slip or Loss



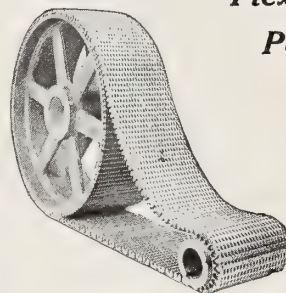
LINK-BELT SILENT CHAIN is 98.2% efficient (on actual test), maintaining this high standard in hot, cold, damp or oily places. It is used to transmit power from lineshaft to driven machine, from motor to lineshaft, from motor to individual machine, or from engine to generator.

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Flexible as a Belt

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*More Efficient
than Either*



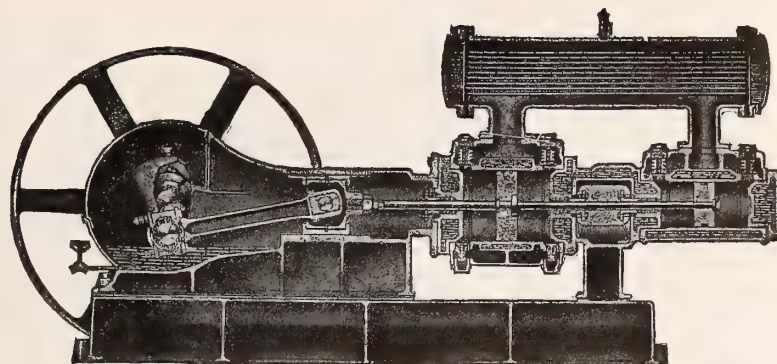
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Machinery Guards
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All Strengths

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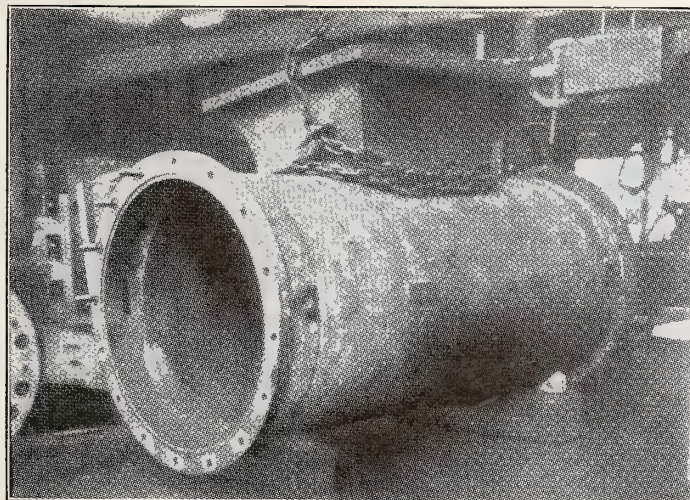
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Ask for the GREEN Drum



Built by Oxy-Acetylene Process

THIS CYLINDER WAS BUILT
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It was tested at 300 lbs. pressure, and has proved satisfactory in all respects ever since.

All interested in machinery,
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Safety First and Always, Use Eddy's Silent 500s.

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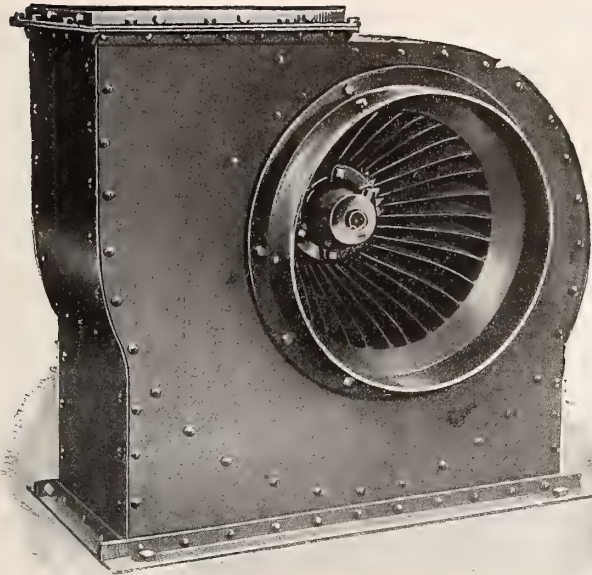
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For Heating and Ventilating

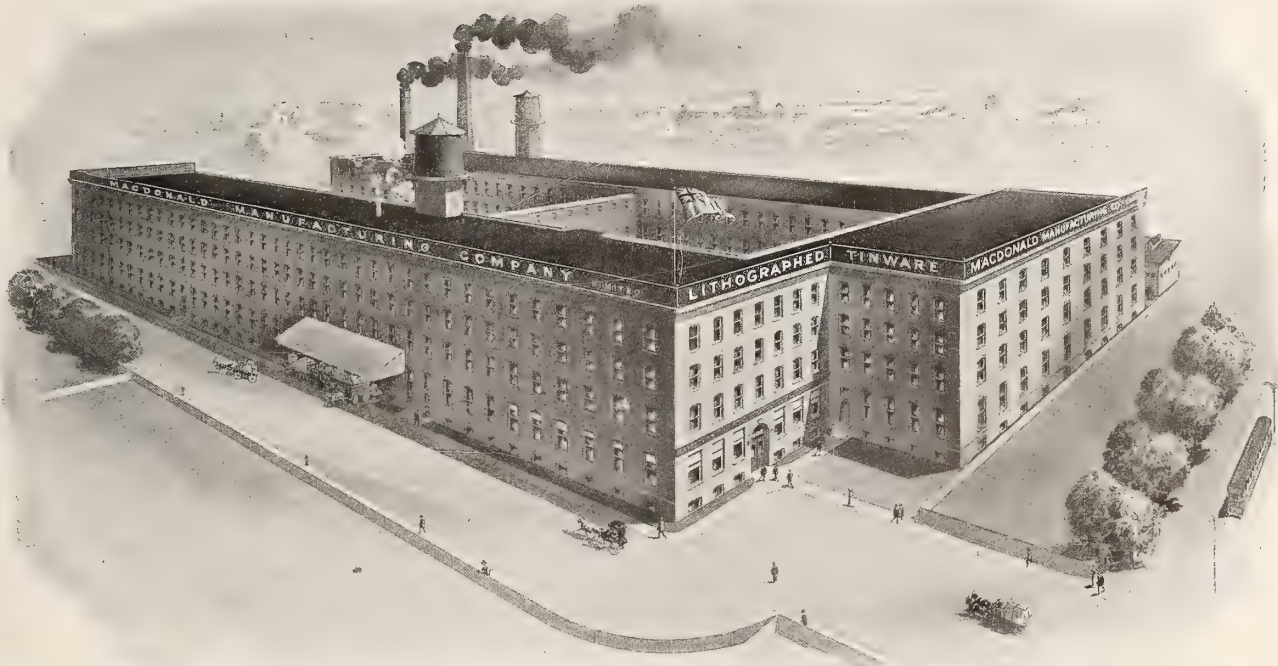
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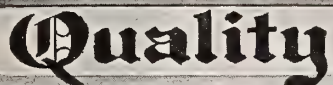
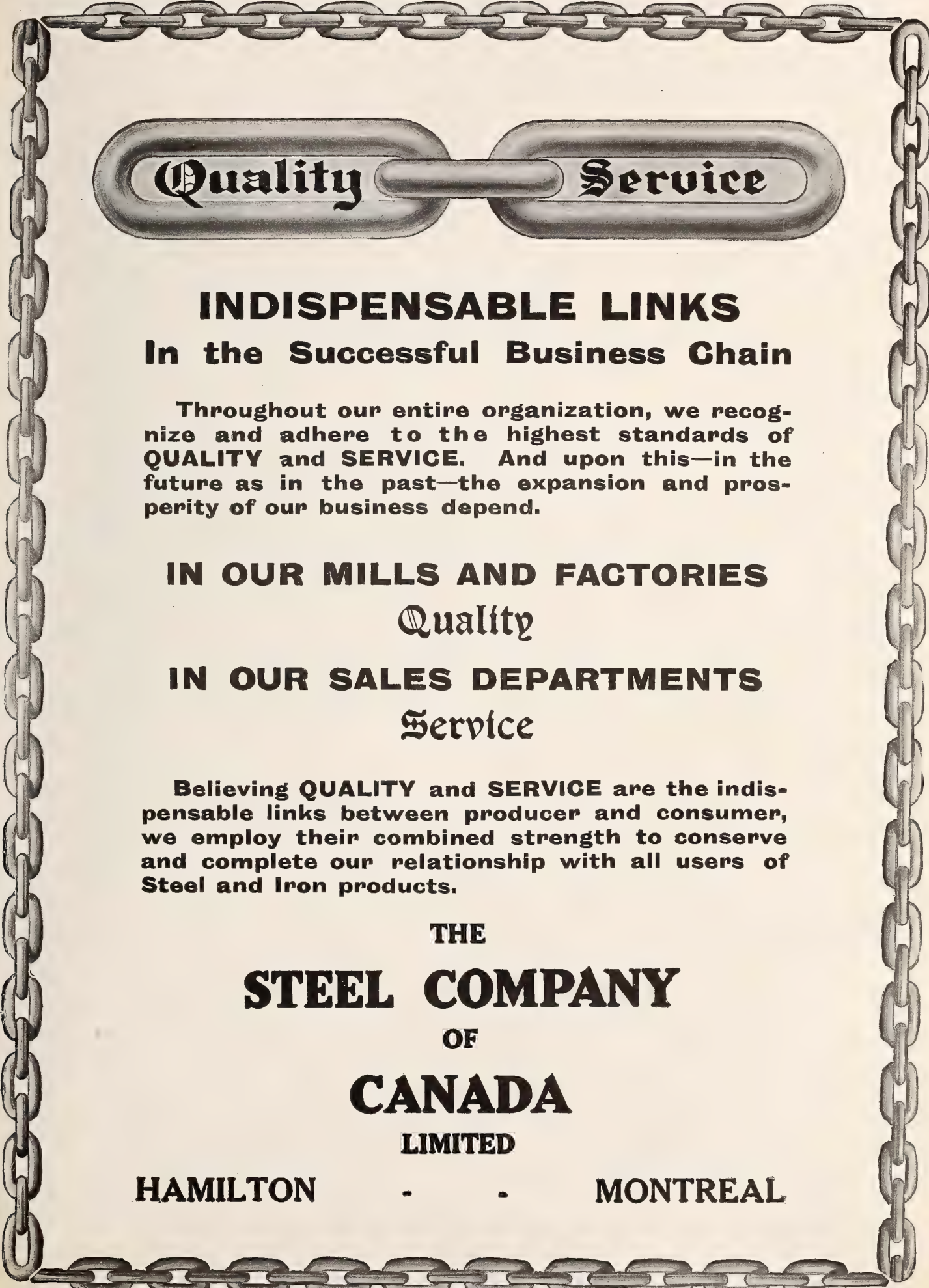
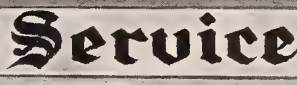
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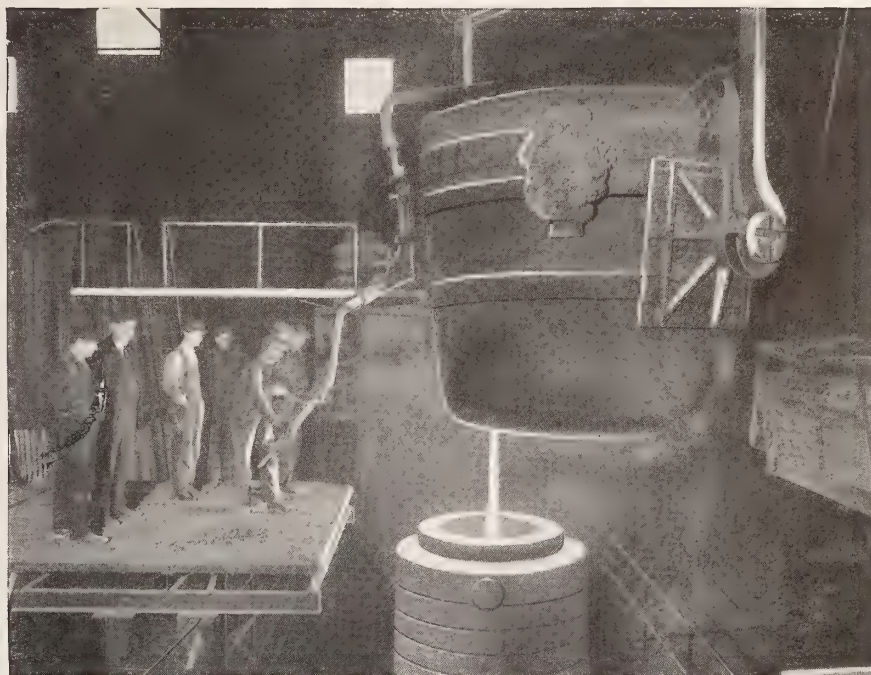
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at the
Blast Furnace
at
Sydney Mines
N.S.

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Shipped from North Sydney, N.S.

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**Head Offices:
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Laying STANDARD Steel-Tape-Armored Cable across a Street.

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in the cost of installing underground electric cables is worth considering these days. A cable which can be laid directly in a trench in the ground without conduits may solve the installation problem before you.

STANDARD Steel-Tape-Armored Cables

are designed for this class of service, and have in many cases shown a 50 per cent. saving in installation cost as compared with single runs of lead-covered cables laid in conduits. Write for bulletin 680, which gives complete information.

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3 phase, 60 cycle, 220 volts

No.	H.P.	Speed.	Make.	Type
1	50	850	Westinghouse	CCL
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2	30	1120	Westinghouse	CCL
1	20	1120	Westinghouse	CCL
2	10	1120	Westinghouse	CCL
1	7½	1800	Westinghouse	CCL
2	5	1800	T. & H. Elec. Co.	New
2	1	1800	Westinghouse	CCL

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No.	H.P.	Speed.	Make.	Type
3	50	850	Westinghouse	CCL
2	40	850	Westinghouse	CCL
4	30	1120	Westinghouse	CCL
1	30	850	Westinghouse	CCL
1	20	850	Westinghouse	CCL
5	20	1120	Westinghouse	CCL
1	15	1120	Westinghouse	CCL
11	10	1120	Westinghouse	CCL
2	10	1800	Can. General Elec.	
1	10	1800	Tor. & Ham. Elec.	
2	7½	1800	Westinghouse	CCL
5	5	1800	Westinghouse	CCL
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2	2	1800	Can. Crocker Wheeler	
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60 cycles, 2200 primary, 220 volt, Secondary.

4	25 k.w.	Westinghouse.
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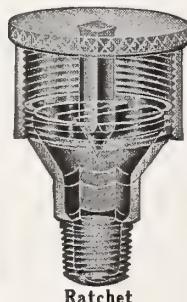
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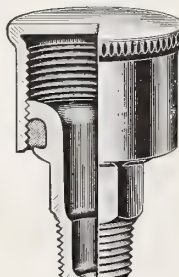


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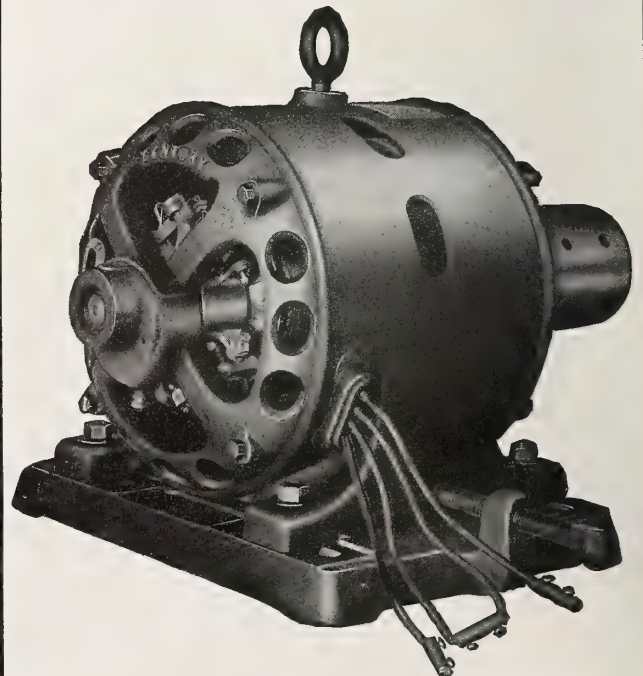
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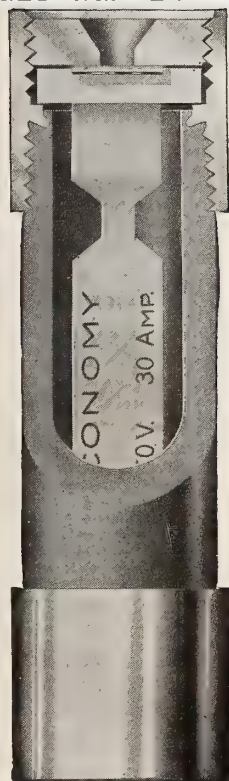
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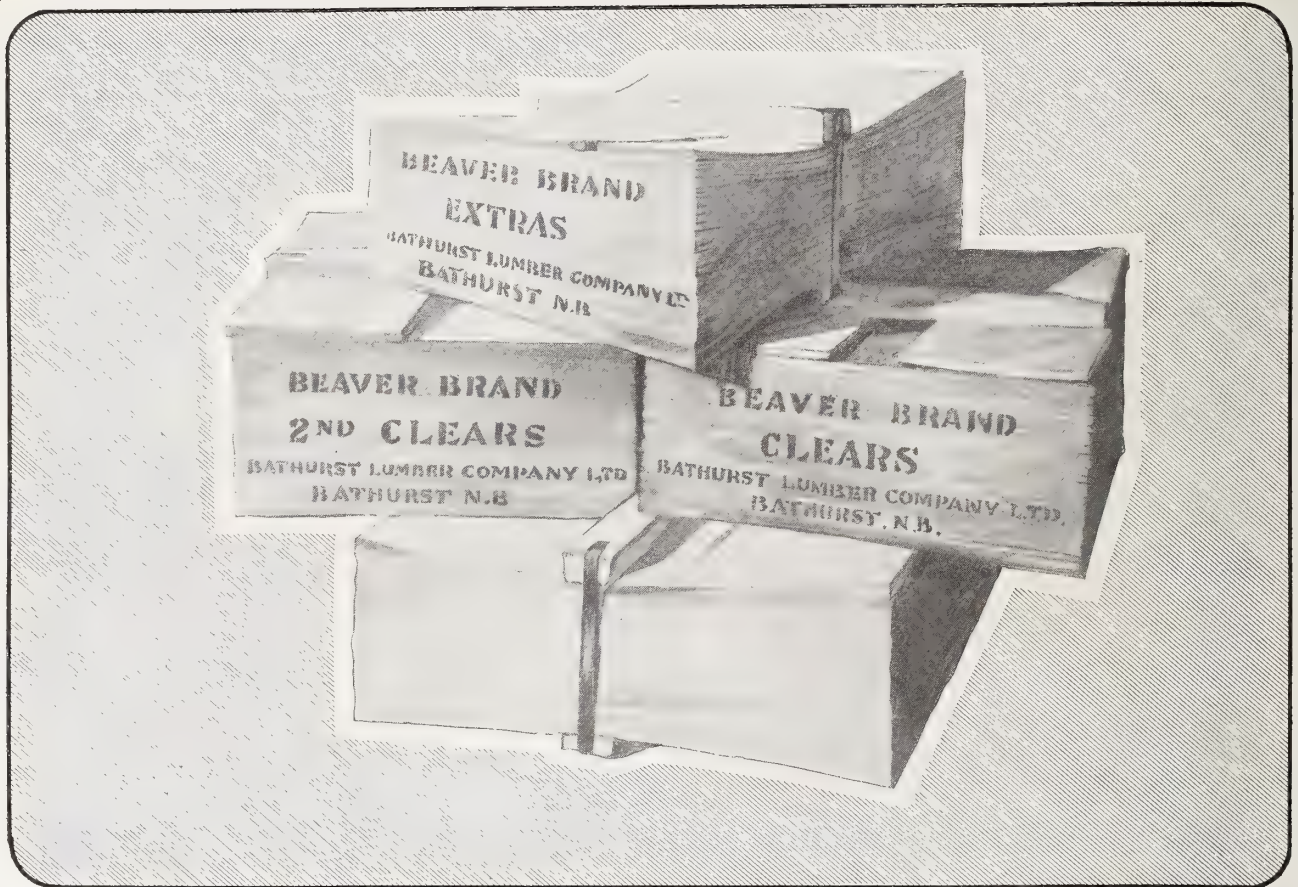
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It let him sleep o' nights.

It did not rattle or strip off in a gale.

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YOU can buy central-station alternating-current power and convert it into direct-current for the more flexible operation of the tools and machines in your plant by installing a Westinghouse Motor-Generator Set.

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This perfect contour will endure—

THIS beautiful macadam road was treated with "Tarvia-A" in 1914. Since then not one penny has been expended for maintenance or repairs.

This grade of Tarvia is of medium density and requires heat for application. It is a favorite binder for just such roads as this, where a handsome, smooth and durable surface is required, free from dust and mud, and proof against damage by automobiles.

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Tarvia is absolutely waterproof and this surface sheds water smoothly to the gutters at all seasons.

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INDUSTRIAL CANADA

ISSUED BY

The CANADIAN MANUFACTURERS ASSOCIATION.

INCORPORATED.

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No. 12

INDUSTRIAL CANADA

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Increased Values and Insurance.

A MATTER of decided interest to members of the Association, and in fact to all large owners of property, is dealt with in the insurance department of this month's issue and we would be remiss in our duty if we failed to direct special attention to it. It concerns the question of insurance in relation to the increased value of both buildings and machinery. As the article points out, the insurable value of any property, theoretically at least, is the sum which would be required to replace it in the same condition as immediately preceding the fire by which it was damaged or destroyed. The fact that the cost of building and materials has gone up enormously during the past two or three years is ample reason for assuming that insurable values are now considerably in excess of those prevailing before the war.

Where the altered conditions are particularly liable to occasion trouble is where a manufacturer has taken advantage of the co-insurance privilege, sharing a small proportion of the risk with the insurance company. It is shown, by illustration, in the article that the assured may quite easily find himself called on to assume a loss if he neglects to maintain his insurance at a figure warranted by the increased replacement value of his property. This

is no impossible situation and it is one that should be carefully watched and guarded against.

In view of these considerations we would commend a careful reading of the leading article in the insurance department. It is put forward as a warning, so that action may be taken before the loss is incurred.

Higher Freight Rates.

SOME startling figures were presented the other day by the chief executives of several United States railroads to the Interstate Commerce Commission in connection with an appeal for an immediate increase in freight rates. According to the evidence of these officials, American roads are face to face with a financial breakdown if some measure of relief is not immediately forthcoming. While gross operating revenues have been expanding, yet expenses have been increasing much more rapidly, with the result that net operating income is decreasing in an alarming way.

Anticipated increases in the expenses of the Pennsylvania system, for instance, amount to \$42,600,000. This gigantic sum is made up of: Taxes, \$500,000; fuel, \$10,200,000; increased cost of materials, \$11,000,000; wages under the Adamson law, \$13,500,000; wages of other employees \$7,400,000. As the 1916 surplus of the Pennsylvania lines was only \$35,000,000, the expected expense increases for 1917 would more than wipe out any similar surplus this year and make a hole in the dividends.

The New York Central System will have an estimated increase in expense of \$29,000,000, made up of materials, \$15,000,000; coal, \$6,000,000 and labor \$8,000,000. This is approximately 22½ per cent. of the freight revenues. The New York, New Haven & Hartford Railway figures on having to meet increased costs of \$10,300,000 and the Baltimore & Ohio Railway, \$11,000,000. In all these cases, surpluses will be practically wiped out and dividends cut into.

A strong point was made by Frank Trumbull, chairman of the Chesapeake & Ohio Railway, who contrasted the six per cent. earned by American roads in 1916, the most prosperous year in their history, with the spectacular profits of the large industrial companies. The American Locomotive Co. made 36 per cent.; the Bethlehem Steel Co., 71 per cent.; the Crucible Steel Co., 44 per cent.;

Packard Motor Co., 48 per cent.; National Biscuit Co., 972 per cent.; Sears-Roebuck & Co., 26 per cent.; Ford Motor Co., 3,000 per cent.; Central Leather Co., 33 per cent.; United States Steel Corporation, 48 per cent., and United States Rubber Co., 15 per cent.

Prospective war conditions, which demanded most efficient transportation facilities; the need for raising fresh capital for new equipment, improvements and expansion and the danger of allowing roads to run down after the strenuous winter just passed, were all reasons adduced for supporting an increase in freight rates. The New York Central Railway had tried to sell stock but had failed; the Erie needs \$150,000,000, but could not dispose of its bonds until it can make a better showing; the Baltimore & Ohio requires \$50,000,000 to put itself in shape to handle a larger volume of business next winter; and other roads are in like plight.

What is proposed by the railways is that the Interstate Commerce Commission amend its rules so as to permit an application for a flat percentage increase to be made by simple amendment to existing tariffs, thereby avoiding the necessity for filing complete new tariffs. The increase to be asked for eastern lines is 15 per cent on all freight rates except those on coke and ore, which it is proposed to increase 10 cents per ton, and on bituminous coal, on which advances have already been asked, ranging from 5 to 10 and 15 cents per ton.

The Canadian situation, insofar at least as increased costs are concerned, must be considered as identical with that in the United States, and if net operating expenses of Canadian roads should give evidence of dwindling away proportionally, it is quite to be expected that another demand for an increase in freight rates will be made on the part of the railway companies.

Production and Unemployment.

THAT nations can go to war month after month, on a scale of universal service, without an economic collapse is something we should have refused to believe two or three years ago. What is the explanation?

The explanation is simple enough. Even the busiest of these nations, ambitious and avaricious, laboring consciously for power and luxury, has nevertheless been working at about 50 per cent. efficiency or less in the past. Economy so highly organized, so greedily appreciative of all mechanical and chemical innovations, so lustful of world-power, has had this vast margin of productive capacity, so to say, up her sleeve. If she had concentrated all her schemes of organization on economic progress and dismissed her dreams of military aggrandisement, what might she not have accomplished in the next ten or twenty years? And, as a warning in passing, what may she not still attain if her neighbors prove complacent and seek their triumphant ease too quickly when peace is declared?

That the adult population of any European country has only in the past been working at 50 per cent. efficiency

does not signify either that they have idled or made holiday. It means that they have not handled the means of production with the utmost diligence and intelligence. There has been a large mechanical margin unused. The least efficient person may be the one who never stops toiling except for meals and sleep; and the most efficient may be a brain worker who seeks frequent relaxation, but who has the power to concentrate his thoughts intensely on the solution of problems of organization or policy, or, on the devising of improvements in machinery. Yet the man with the sweating brow and the spade is in popular esteem a more admired figure than the cool chemist in his laboratory.

What happens when half the workers of a nation go to the camps or to the arsenals is that the rest must labor more efficiently. In Britain that has been brought about by an industrial rearrangement which has employed millions of our people more productively than before, removing many women from the scullery to the factory. Unlike the new soldier, they are passed from work of destruction to work of production.

Most people seem to have visions of millions of unemployed stalking hungrily in search of wages and threatening violent social disorder. But the question is primarily not so much whether there are jobs awaiting them as whether there is a living. We are keeping them now. We can go on keeping them, if necessary, in gradually decreasing numbers without employing them, except as standing armies.

All that is required at any time to dispel the nightmare of unemployment is that the nation should encourage the use of its brains and machinery; its mental and mechanical powers of organization. We can only live on or by what we produce and the more we produce the better we shall live. It is a good point, now more frequently made, that we must pay for the war by increased production of wealth. Do not let us be afraid to come to close quarters with the amazing phenomenon that, as the war goes on, it seems to become in some ways economically easy. We are able to do so much because we find that our reserves of accumulated wealth and credit are greater than we knew and because we have brought into employment part of a hitherto unused margin of the physical and mechanical means of production.

People are bound to ask themselves why it should only be guns and shells—instruments of destruction—that should be manufactured by intensive methods. Many things for which the world is almost starving might equally well be made amidst the same chorus of patriotic mutual encouragement and the same free flow of currency.

In our time of terrible danger the engineering industry has saved the situation. Another abnormal situation is certain to follow. Our claim is that our engineering industry can and will and must be made to save that also. The great machine can, as it were, reverse. Instead of destroying it can construct. Instead of dealing out death and disaster it can give longer and fuller and brighter

life to the masses of the people. And having had our engineering industry fed with millions of new capital for the hasty purposes of war, it is quite probable that the best way to prosperous peace is a bold continuation of investment in this field, rendering it still more efficient and productive in proportion to the human effort employed.

The great battle line of economic controversy divides two opposing forces, marshalling, on one side, those who know that wealth for everybody can only be attained by intensified production, by the enlistment of every discovery of science and every mechanical improvement, by the continuous reform of organization in the effort to make brains, nerves and muscles more profitable to all classes and to the nation; and, on the other side, those whose faith lies in the niggardly and grudging employment of economic apparatus; whose appallingly unsound opinion is that it is better to cramp and confine the productiveness of machinery; whose doctrine amounts, indeed, to a preference for growing one blade of grass instead of two.

But it is our duty to fight harder on the side of intelligent availment of the powers offered to us. There exists a vast unused margin of economy and efficiency out of which we can recover our own costs with a handsome surplus. We have shown that it is only by encroaching on this margin that we have been able to keep our heads above water while so many millions of Europe's men and women have been working and using the machinery of sudden death. We ought to have been learning the most impressive lesson in practical political economy ever delivered in modern times. And all who read that lesson owe it as a national obligation to give their utmost support to a patient and tactful, but determined campaign for the full enlightenment of the whole community. Nothing more is needed to ensure that there shall be no problem of unemployment, and that the citizens of the country shall have their full share of the good things of life.

For the Protection of Creditors.

THE British Board of Trade has been directing attention recently to a new Russian law, which seems to possess points of interest. The law was drafted with a view to prevent fictitious transfers of business undertakings and property for the purpose of evading liabilities. This purpose is achieved by means of notarial and other procedure, as well as by compulsory publication and notification to the creditors concerned.

The new law requires that an agreement concerning the transfer of a commercial or industrial undertaking must be made before a notary, and must be fully registered in the notarial books. The agreement must be accompanied by a very detailed list giving all debts and liabilities of the undertaking, with a most exact enumeration of the names of the creditors, their domicile, and the amount due. This list must be signed by the seller and

the purchaser and attested by the notary, who, within three days' time, must publish a notice in the *Official Gazette*, stating the names and addresses of the seller and purchaser, and the address of the undertaking. The same notice has to be given to certain authorities, and a special notice in writing must be sent by the notary to each of the creditors.

One of the most important features of the new law is that, as regards liabilities enumerated in the above-mentioned list, both the seller and purchaser assume joint responsibility, and the creditor may claim from either. The liability of the purchaser for the debts of the undertaking remains in force for five years from the date when the debt became payable or the date of the transfer, as the case may be. The transfer of an undertaking of one limited liability company to another is, by an important exception, not affected by the new law.

The law also contains rules concerning the declaration of nullity of all fraudulent agreements. Any creditor who has obtained an order of the Court on his claim against a debtor, if he cannot obtain satisfaction from the debtor's assets, or if it is manifest that his assets do not cover the amount of the claim, is entitled to ask the Court for a declaration that an agreement entered into by his debtor with a third party is void, as being concluded with the intention of defrauding his creditors.

Canada's Railway Problem.

HOWEVER much one may agree or disagree with the solution of Canada's railway problem propounded by W. F. Tye, C.E., before the Canadian Society of Engineers, that gentleman must be commended for his public spirit in giving so much time and study to a matter of so great national importance. The publication of his address in booklet form and its wide circulation should serve still further to emphasize the seriousness of the subject he has undertaken to discuss.

That we have a railway problem, and a weighty one, must be obvious to every intelligent Canadian. Not only have enormous sums of money been sunk in the past in extravagant railway construction, but the country is confronted with still more capital outlay, while immense sums are being handed over annually by the people of Canada to make up deficits in operation and to meet fixed charges. The country is over-railroaded. It has thousands of miles of lines through territory that is not and may never be productive.

Naturally we may let things drift along as they are, hoping and waiting for a day when the growth of the country will at length justify the extravagance of the past decade. But this is a policy that will not appeal to the great majority of the people, who do not regard it as any privilege to be called on to pay increasing debt charges for the benefit of future generations. What is wanted is some relief now, some effort to put matters on

a more satisfactory basis and, if possible, to prevent the country from becoming more deeply involved.

Mr. Tye has seized upon two salient facts—the strength of the Canadian Northern System in the West, its weakness in the East; and the strength of the Grand Trunk System in the East and its weakness in the West. To round out both systems, thus providing the Dominion with three complete transcontinental systems would, in his opinion, simply aggravate the situation, piling debt on debt and making the number of lines of railway out of all proportion to the needs of the country. Stop now, he says in effect; combine the Grand Trunk and Canadian Northern lines, and let us have but two transcontinental systems.

With the idea of preventing further unnecessary railway expansion, most people will unhesitatingly agree. Where debate is bound to arise is over the question of the future administration of the railways. Mr. Tye suggests the formation of a new company to operate the combined Grand Trunk and Canadian Northern Systems. In this company, the Government would have a 40 per cent. interest, supplying 40 per cent. of the capital required, owning 40 per cent. of the stock and appointing 40 per cent. of the directorate. The actual management, however, would be in the hands of the company, thus combining the idea of Government ownership and private management.

We see, therefore, that Mr. Tye is opposed to the idea of Government ownership and control in its absolute form. He reiterates the old argument of the dangers of political influence, which he believes would result in unbusinesslike administration, consequent deficits and the making up of these deficits by taxation. He also believes that the cost of nationalization would be too great for the country to finance; that entire lack of competition would be disastrous and that lack of continuity of management following on changes of government would have a bad effect.

In view of the live interest of the subject, the approaching publication of the Commission's report on the situation is being awaited with considerable interest. Whether it will give the cue to prospective action by the Government remains to be seen. In the meantime, it is as well to reserve judgment until the report appears.

The Master Catalogue.

IN last month's issue of *INDUSTRIAL CANADA* reference was made to the proposals of W. L. Chandler, assistant treasurer of the Dodge Sales and Engineering Co., for a master catalogue to include the lists and catalogues of all the leading manufacturers. The idea of a standard master catalogue in vertical letter files to displace the present miscellaneous collection of bound books, pamphlets and circulars of various sizes has apparently been received with a good deal of enthusiasm by buyers generally.

The details of the most important parts of the master catalogue remain to be developed to their fullest extent. For instance, the index of this master catalogue must be standardized for two important reasons: Sales managers want their printed matter to secure for them the greatest possible benefits and therefore they must know exactly how to arrange and index their lines of goods to be sure that when the buyer refers to his catalogue he will find their sheets or books. Buyers must be able to feel that, when they have looked in a certain definite place in their master catalogue, they have there found all their available data. "One place for everything and everything in its place."

No one individual is competent to prepare this index to completely serve the best interests of each separate industry. There is too much at stake for the various industries involved to permit any stone to remain unturned which, having been turned, will enhance the value to that industry of the master catalogue.

It remains for each industry to look after its own interests and to see that those who are most thoroughly familiar with its particular requirements, and who are best qualified to plan its section of the index are invited to co-operate in that work. Herein lies an opportunity for very effective constructive work on the part of the various trade journals and associations for the general benefit of all the members of their industry.

There seems to be no industry, the product of which is not sold by means of printed matter. Therefore all should benefit by the proper planning of their section of the index. When all buyers have indexes adequately representing all those lines of material which they are in the habit of buying, and when sales managers know that they have them, the preparation and utilization of printed matter will have been simplified materially. Besides a marked economy in catalogue distribution, a decided increase in efficiency in buying will be realized.

An Industrial Census.

ANNOUNCEMENT that the Dominion Government will take a comprehensive census this year of Canadian industries has been made from Ottawa. The proposal, as outlined by Acting Premier Sir George Foster, is to secure the fullest possible data, so that useful information may be on hand for the period of reconstruction after the war. Plans already drawn up for certain sections of the field will be completed during the summer, and the inquiry launched towards the end of the year, so that the results will be available in 1918. A similar suggestion, it is understood, has been put forward by the Reconstruction Committee of the British Cabinet. For adequate organization, information as to the industrial resources of the Dominion is indispensable, and the move to take a new census of our industries is in the right direction.

CANADA'S STRUCTURAL TIMBERS

Extracts from a recent important bulletin issued by the
Forestry Branch, Department of the Interior

By H. N. LEE

THE Forest Products Laboratories of Canada, established at Montreal by the Department of the Interior, in co-operation with McGill University, have undertaken an investigation of the woods of the different species of trees in Canada so that reliable and authoritative information may be available as to the strength, durability, and other qualities of Canadian woods and their adaptability for use in structural work and manufactures of various kinds. Such investigations have only begun at the Canadian Laboratories and the only Canadian species in regard to which fairly complete information has been obtained is Douglas fir, but as there is a special interest at the present time in information in regard to structural timbers, particularly in a comparison between Canadian and foreign timbers, it has been considered advisable to issue a preliminary study on structural timbers, using the information now available from many sources and particularly the results of investigations made at the laboratory of the Forest Service of the United States.

It will be found that Canadian timbers rank high for structural purposes. The results of an exhaustive series of mechanical and physical tests of Douglas fir made at the Forest Products Laboratories of Canada are now in course of publication and similar tests of other important Canadian woods are in progress, the results of which will be published as soon as they are available.

Broadly speaking, all wood which is so used that its strength is a factor of first importance may be called structural timber. In this discussion, however, we shall pay special attention to the woods which are, or may be, used in building construction. No special mention will be made of timbers suitable for ties, paving blocks, or for use in mines, and the discussion is limited to coniferous woods. Lower freight rates and recent specifications by the Canadian Government and by certain of the large corporations providing that native wood should be used in preference to imported species will probably result in an increased use of Canadian woods, especially Douglas fir.

The heavy structural species of Canada named in order of merit and resources are: Douglas fir, western hemlock,

eastern hemlock, western yellow pine, western larch, red pine, and eastern larch.

Beside the above, the spruces are used largely in the East for all except the heaviest purposes, and certain pines, true firs, and cedars are sometimes employed. These woods, however, are in many cases more valuable for other purposes and will probably be less used for structural purposes as the stronger woods become more available. The following is a brief statement of the properties, characteristics, and more important uses of these woods, and includes also a discussion of the comparative value of the southern pines and Douglas fir.

In 1913 there was more Douglas fir timber cut in Canada

than any other single species. Only the spruces, collectively, produced more timber than did Douglas fir, while in 1914 the spruces and white pines both produced more. Although in 1915 the cut of Douglas fir decreased, it may be expected to increase rapidly hereafter in yearly production, as it is the only timber in North America of which great areas, accessible to easy develop-



Red and Black Spruce being used in shipbuilding in Nova Scotia

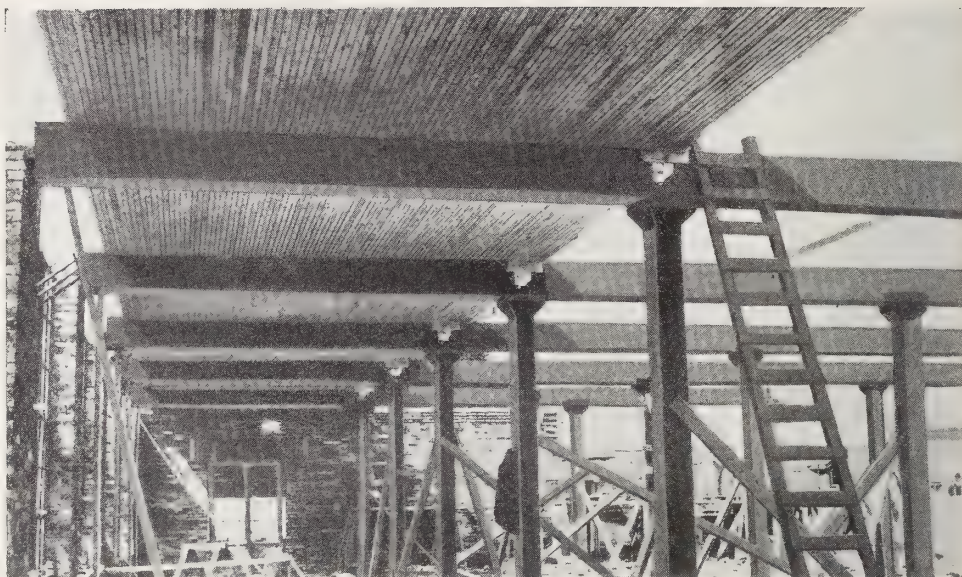
ment, remain untouched. British Columbia cut practically all of the 601,643,000 feet, board measure, of Douglas fir, worth \$6,810,000 at an average value of \$11.32 per thousand feet, which were cut in 1914. In 1915 the production was 453,534,000 feet, board measure, with an average value of \$11.76 per thousand.

Scientifically the wood is known as *Pseudotsuga mucronata*, *P. taxifolia*, or *P. Douglasii*. Besides being called "Douglas fir," it is known in trade as "red fir," "yellow fir," "British Columbia fir," or "pine," "Douglas spruce," and "Oregon pine." "British Columbia pine" or "Oregon pine" are the most common export names. Formerly it was called "spruce" or "pine" because to call it "fir" would class it with the true firs (the genus *Abies*), which are totally different in properties, but now that it is better known there is no reason why it should not be marketed under its own name. Although botanically there is only one species, the mountain form which grows where rainfall is light is a tree much inferior in size and in general qualities to the coast form growing in the more moist climate. Only the coast form is exported.

Douglas fir is at present one of the most important of

Canadian woods, and within a few years it will probably be the most widely used and valued of Canadian timbers. It is the largest structural timber growing in Canada or the United States. In Canada it is found in British Columbia and to a limited extent in Alberta. These have been measured up to 380 feet high with a maximum diameter of 15 feet, the largest trees scale as high as 60,000 feet, board measure. This great size places the timber in the highest class for large timbers free from defects.

The wood is one of the hardest, heaviest, stiffest, and strongest to be found in Canada. The sapwood is usually narrow, being not over 2 inches wide. The heartwood varies in color from a decided reddish tinge to a light yellow. Timber from the eastern limit of its range, from second-growth, or from the centre of old trees is likely to be coarse-grained and red but most of the coast variety produce the fine-grained, clear wood of a yellow color, that has made Douglas fir famous. Absolutely dry it varies in weight from about 24 to 34 pounds per cubic foot, with an average of approximately 28 pounds. The dark summer-wood is well developed, is hard, flinty, and clearly marked, while the spring-wood is soft and much lighter in both color and weight. (See plate 18.) The number of rings per inch is rarely less than eight and is commonly from twelve to sixteen. In general wood having less than eight or more than sixteen rings per inch is weaker than that ranging from eight to sixteen. It is usually of uniform growth and comparatively free from knots and pitch. The average moisture content in green-sawn timber is up to 40 per cent. and is fairly evenly distributed throughout. In air-seasoned timber the average moisture may be reduced to less



Douglas Fir used in timbering and laminated flooring

than 20 per cent., with less near the surface but more in the middle of the stick. Rapid drying of the surface produces checking but drying, properly handled, produces a fine, sound, clear wood.

So far as structural timber in the Dominion is concerned Douglas fir is by all means the most important, although there are several other species which produce very good structural timber. According to recent estimates of the Commission of Conservation, the total supply of merchantable Douglas fir timber is about 75 billion feet, board measure, and since the tree grows satisfactorily under reforestation there is little reason to believe the supply will be exhausted for many years. In fact, proper protection should insure a perpetual supply.

Utilization.—Douglas fir is manufactured into almost all forms known to the saw-mill operator and a very large amount of the wood is also utilized in the form of round or hewn timber. In building trades it is most important, being used for beams, columns, and heavy flooring in mill construction as well as for all kinds of dimension stock, joists, floor beams, rafters, flooring, siding, and finish of all kinds in general construction. For bridge, trestle, and harbor work Douglas fir is superior in many ways to any other Canadian timber. It is largely used by the railways in the form of ties, piling, car, and bridge material. It has long been the most important timber for boats and ships on the Pacific coast, being suitable for both outside and inside work, especially for decking, planking, keels, yards, ribs, and finish. Increasing amounts of Douglas fir are being used in furniture making and in this line it is particularly adapted to "mission" furniture. Tight and slack cooperage, tanks of all kinds, conduits and water pipes, paving blocks, boxes, and pulpwood may be mentioned as further illustrations of its utilization.



Framing timbers of Douglas Fir in a modern Canadian Factory

Although the properties of Douglas fir enable it to be employed in such a variety of ways, it is probably most widely known as a structural material. For this purpose it is inferior to no other wood and its straight, clear trunks can supply timbers of the largest size and highest quality. It may be said, then, that Douglas fir is not only of first value as a timber for all kinds of structural work but is also suitable for a greater variety of uses in the manufacture of various products than any other Canadian wood, with the possible exception of white pine.

Western hemlock (*Tsuga heterophylla*) is found in Canada as a commercial species only in British Columbia, where it occurs as an excellent timber tree. In 1915, 24,959,000 feet, board measure, worth \$285,637, were cut. The average value was \$11.44 per thousand feet.

Western hemlock has often been considered an inferior wood, especially in localities where it is not well known. The results of recent investigations of its properties show this prejudice to be unfounded and that it deserves a place as an important western wood.

Western hemlock is known under a variety of names in different localities and is often given a fictitious name for the purpose of assisting in marketing the lumber. Certain commercial organizations, however, are beginning to place hemlock on the market under its own name. The common names in use are "hemlock," "western hemlock," "hemlock spruce," "western hemlock spruce," "western hemlock fir," "Prince Albert fir," "grey fir," and "Alaska pine" and "silver fir." The names "grey fir" and "Alaska pine" are sometimes used

in the West, while in England "western hemlock fir" and "Prince Albert fir" are used.

The heartwood of western hemlock is almost white. The yellowish-white sapwood forms a very small proportion of the trunk and is generally not over one inch in thickness. The green wood has a distinctly sour odor, which is not present

in seasoned material. It is noted for holding nails, is non-resinous, and is reputed to be shunned by insects, vermin, white ants, rats, and mice. It works smoothly and takes paints and varnish well. The lumber is sometimes mixed with Douglas fir and sold and used for the same purposes.

Western hemlock is suitable for all but the heaviest construction work. It has a limited use in bridge and trestle building and has been employed in caisson construction. For use in harbor construction it is suitable for under water work. In house construction it is used a great deal as a framing material. For this class of work it is satisfactory, and, locally, brings the same prices as Douglas fir. Western hemlock in cargo shipments commands about the same price as Douglas fir.

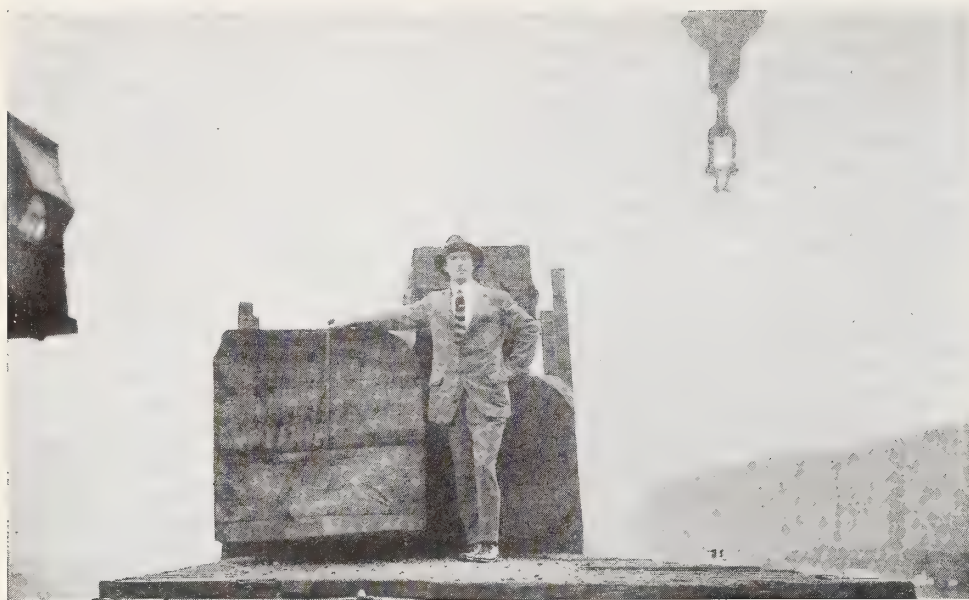
Western larch (*Larix laricina*) is found

commercially only in British Columbia. It is sometimes known as western tamarack or hackmatack but yields a wood much superior to the eastern species. In 1915, 28,023,000 feet, board measure, worth \$362,089 at \$12.92 per thousand feet, were produced. It ranked seventh among Canadian woods cut in 1913 and tenth in 1915.

Western larch is a hard, heavy wood, having many of the qualities of Douglas fir and is often found in the same uses.



Douglas Fir Timbers. 46 in. by 46 in. by 70 ft., for Montreal harbor work



Douglas Fir Timbers for Montreal harbor work

It is used to some extent for cross-ties and has given satisfaction because it is durable and holds spikes well. Its hardness, fine grain and pleasing reddish color are making it more and more popular for flooring and other forms of finish. The chief use of western larch as a structural wood is in local railroad and mining centres, and for framing. Larch is not as strong as Douglas fir, and considering also its limited supply, will have no such importance as that wood as a structural timber, but as the grading of structural woods becomes more refined, on the basis of fundamental qualities, larch will undoubtedly have its markets extended.

Eastern hemlock (*Tsuga canadensis*) is sometimes known as "hemlock spruce" or "hemlock fir." It is found in all the provinces east of Manitoba, but Ontario produces much more of the timber than all the others together. In 1915 the average value per thousand feet, board measure, was about \$14; the total cut, 214,033,000 feet; and the total value of timber produced, \$2,985,975. Hemlock ranked fourth in quantity of timber cut and in value in 1915.

The wood is reddish-brown in color. The sapwood is difficult to distinguish from the heartwood. The annual rings are distinct. The wood is fairly stiff but rather harsh and splintery; it holds nails well and is suitable for many purposes in place of more costly woods, as for example, when used in under-water construction. A large proportion of the hemlock timber cut is used in its rough form for joists, rafters, boxes, concrete forms, construction lumber, etc. The remainder is further manufactured into finished products before reaching the market.

Western yellow pine, western soft or bull pine (*Pinus ponderosa*) is limited to British Columbia where, in 1915, 35,166,000 feet, board measure, of a total value of \$457,758 and average value per thousand feet of \$13.02, were cut. It ranked eleventh in amount among Canadian woods for

1915. Western yellow pine has furnished a large part of the bridge and trestle timbers for railroad building in the western mountains and the plateaus. Its uses range from the coarsest construction to the making of patterns, as a competitor of white pine. It is used largely in house construction, for flumes, as a mine timber, and for bridge work. The lumber is widely exported, and reaches New Zealand, Australia, England, Ireland, Scotland, the continent of Europe, and elsewhere.

The wood is softer and lighter than Douglas fir or longleaf Southern pine. Western yellow pine is not primarily a structural timber, but one more adapted to shop uses, planing mill products and finish, and because of its soft texture, white color, and non-resinous character, is marketed largely as "western

white pine." There seems to be a great variation in the wood, which is sometimes hard and strong, while in other cases it is very soft and easily worked.

Tamarack (*Larix laricina*) is found throughout Canada but is nowhere cut to any great extent, only about 8,000,000 feet, board measure, valued at approximately \$130,000, being produced in 1915. Most of this was cut in Ontario and Quebec.

It is at present a structural timber of minor importance and is used only locally. It is known also as "larch," "hackmatack," "American larch," "black larch," and "red larch." The wood resembles red pine. The grain is rather coarse. Lumbermen recognize two varieties of tamarack, the red and the white, the distinction being based on the color of the heartwood, which varies with the soil and climate. The wood is used in shipbuilding, sometimes in the form of knees, and also for spars and masts, and for ties and telegraph poles.

(Continued on page 1422.)



Douglas Fir Timbers for Toronto harbor construction

A NEW GAS PLANT INSTALLATION

Description of the New Gas Works at Sherbrooke, Quebec

By WILLIAM RODGER

Chief of the Engineering Department, Jenckes Machine Co., Limited

IN the new Sherbrooke water gas plant, recently installed at a cost of about \$100,000, the coke is stored adjoining the gas house, and is taken in by means of buckets having a capacity of $13\frac{1}{2}$ cubic feet, which are mounted on carts designed for the purpose. At the entrance to the gas house a set of scales are placed for weighing the coke before making the charge. The buckets are then hooked on to the swing crane, which is fixed to the wall of the building, and are lifted to the loading platform by means of a steam hoist controlled by a four-way valve. The bucket filled with the coke is emptied into the generator from the loading platform.

There are two generators, 5 ft. diameter, 11 ft. 6 in. high, equipped with 10 in. blast and 14 in. by 22 in. gas outlet nozzles. The size of the clinker doors is 12 in. by 18 in. The ash doors are 10 in. by 18 in., and there is a 20 in. charging door. The grate bars are made of cast iron resting on supports. The generator is double-lined, $10\frac{1}{2}$ in. thick, backed by heat insulating material, the inner lining being of a special grade of brick 6 in. wide. The ashpit and clinker doors are provided with asbestos gaskets having cast iron liners to protect the tiles. The charging door was made extra large to facilitate clinking and was provided with sight cock. The upper part of the generator lining included three courses of key bricks, so as to enable easy replacement of the inner lining next the fuel bed.

The carburetter is of similar construction to the generator, and is filled with chequer bricks so arranged as to form a series of baffles to the gas. At the top of the carburetter, heated oil is sprayed in the form of a mist and meets the gas from the generator. There are two carburetters, each 4 ft. 6 in. diameter, 12 ft. high, with 6-in. blast valves, 14 in. by 22 in. inlet and outlet nozzles. The doors are 18 in. by 12 in., chequered bricked, and there is one 12 in. by 18 in. cleaning door, an 18-in. nozzle being placed on the top head, which supports a 6-in. tee, to admit the blast and an improved centre spray. Two sight cocks are also furnished. The lining is made $7\frac{1}{2}$ inches thick, and backed by heat-insulating material; the filling installed is made of chequer brick.

A large vaporizing chamber was furnished which was

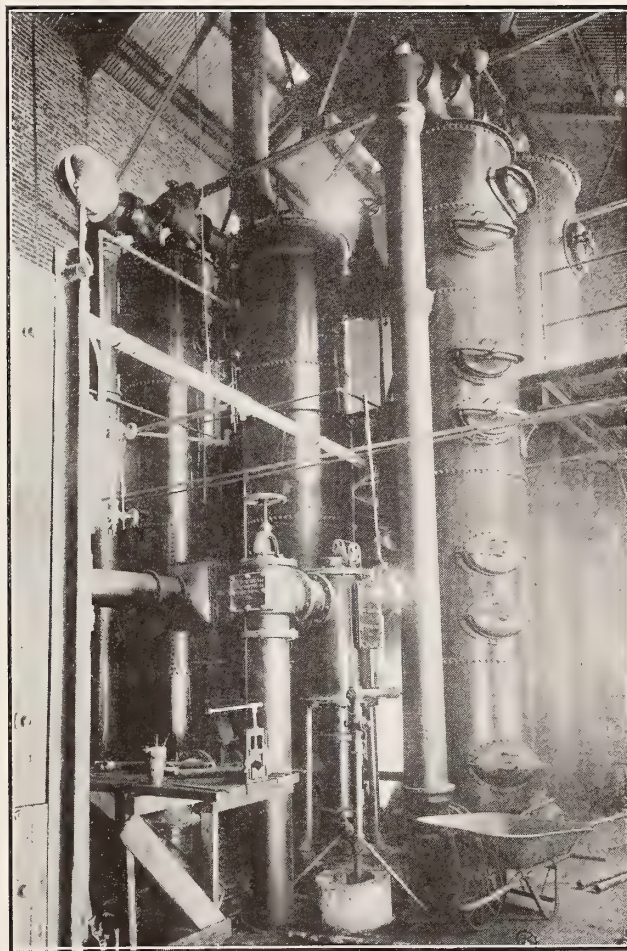
built on the top of each carburetter to give the most efficient use of the oil. The oil spray is protected during the blast period by being drawn up into the blast tee. From the carburetter, the gas passes on to the superheater (or fixing chamber) which also contains chequer bricks similar to the carburetter, and in this chamber the gas is made permanent.

There are two superheaters, 4 ft. 6 in. diameter, 21 ft. high, furnished with 6 in. blast, 14 in. by 22 in. inlet, 16 in. stack and 10 in. outlet nozzles, having four doors, 18 in. by 12 in., chequer brick, and one cleaning door, 12 in. by 18 in. The stack valve is 10 in. in diameter. The stack is made of steel, 18 in. diameter, extending through the roof and is protected by a hood over the upper end. The superheater is lined, $7\frac{1}{2}$ in. thick, and backed by heat-insulating material. The filling also is of chequer brick. The stack valve operating lever was arranged to save as much time as possible for the operator.

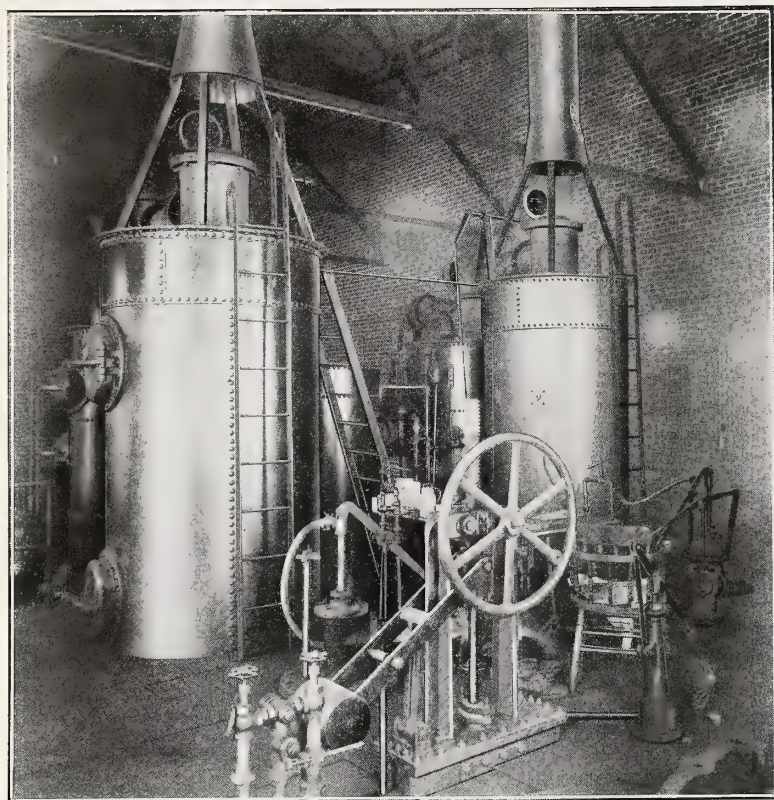
The gas is made by admitting steam at 100 or 120 pounds pressure through the bed of incandescent coke in the generator, where it is decomposed into its constituent gases, oxygen and hydrogen. The resultant oxygen combines with the carbon of the coke, forming carbon dioxide, which, rising through the higher layers of the incandescent coke, is reduced to carbon monoxide, and this, mixing with the hydrogen, constitutes what is known as a "blue" gas. This is non-luminous, and is afterwards enriched with oil in the carburetter, as above mentioned, which imparts to the gas its light-giving properties.

The process of manufacture can be continued as long as the fuel in the generator is sufficiently high in temperature to reduce the carbon dioxide to the monoxide. Usually after six to seven minutes gas-making, the temperature of the fuel falls too low for this reduction to take place. The steam and oil supply is then shut off and an air blast turned into the generator, thus again raising the temperature of the fuel. A period of three or four minutes is sufficient, after which the steam and oil are turned on again.

From the superheater the gas passes into the seal scrubber and is sealed off in the water in the top of the shell. The overflow tank is placed just below the operating floor, so that the operator can at all times observe the nature of the overflow.



VIEW ON THE BOILER FLOOR
Showing condenser, superheater, tar extractor and two scrubbers



VIEW ON THE OPERATOR FLOOR

Showing the superheaters, condenser, scrubber, carburetter and machine, which changes steam either on top or bottom of the generator

The drain tanks are situated on the ground floor to receive the overflow from the condensers and the two overflow tanks at the operating floor. Cast iron pipes are fitted to take the gas from the top of the seal section on the outside to the bottom of the scrubber section. The wood trays are made in sections to enable same to be readily passed out through a manhole in the shell.

On the Operator Floor.

There are two seal scrubbers, each 3 ft. 6 in. diameter, 19 ft. 8 in. high, complete, including 10 in. nozzles, seven 11 in. by 17 in. manholes, three layers of wooden trays, removable spray and overflow connections. The gas passes from the seal scrubber to the condensers. The condensers are 3 ft. 6 in. diameter, 19 ft. high, having sixty-one 3-in. tubes, 16 ft. long, including manholes, 10-in. nozzles, water and drain connections. The condenser has a second inlet nozzle with 10-in. valve between condenser and each scrubber, also fully equipped with baffle plates. The gas passes up and down the tubes of the condenser and then enters the tar extractor.

The tar extractor tank is made of steel plates, 5 ft. by 5 ft. by 12 ft. long, 3-16 in. thick, containing five wooden baffles and having a 4-in. inlet and outlet nozzle. The gas passes from the tar extractor into the small relief holder, which has 30,000 cubic feet capacity and is 45 ft. diameter, 19 ft. high. The water tank is 47 ft. 10 in. diameter and 19 ft. deep. The standards are made up of ten 6-in. I beams, the web being placed radial to the tank, extending 19 ft. 6 in. above the walk, and carried down to the bottom inside of tank, and bound together at the top by 16-in. struts, then to the tank with brackets and filling pieces. The goose necks are fixed to the outer edge of the crown by studs, and made up of two side plates $\frac{3}{8}$ in. thick. Angles are $2\frac{1}{2}$ in. by $2\frac{1}{2}$ in. by $\frac{3}{8}$ in.

thick. The flanged rollers are 9 in. diameter with $1\frac{1}{4}$ in. diameter cold rolled steel bolts, so arranged as to be easily adjusted.

The Exhausters.

The exhauster takes the gas from the relief holder and relieves the pressure caused by the obstruction offered to the gas in its passage through the ammonia washers, invariably results if the use of the exhauster is to increase the production per ton and to improve the quality of the gas. There are two exhausters of No. 3 Roots latest design, having adjustable bearing and stuffing boxes, one being geared to a 2 h.p. constant speed induction motor, 60 cycle, 2 phase, 220 volts, alternating current, and mounted on heavy cast iron bed plates, and the other directly connected to a vertical steam engine. The ammonia washers are 3 ft. by 3 ft. by 2 ft. deep, the sides and bottom plates being of cast iron with bolted flanges, the inlet-fitting distributing the gas to the ducts from which it will escape by bubbling under the edges. The gas as it rises will be caught by the perforated screen which subdivides the particles into a fine foam. These screens are so constructed that the solid matter precipitated from hard water will tend to wash off and drop to the bottom of the washer, and the design is such that stopping up or excessive back pressure can be avoided.

The baffle plates between the ducts and the outlet openings are made to prevent particles of water from being carried out with the gas. The adjustable overflow that regulates the seal of liquor around the ducts is equipped with a glass plate for observation purposes. A differential gauge and test cocks are provided and the overflow pipe is sealed off in a 10 in. by 36 in. tar pot.

The gas then passes from the ammonia washers into the purifiers where it receives its final touch. The purifier boxes are made 11 ft. 6 in. diameter, 12 ft. deep, bottom and sides $\frac{1}{4}$ in. thick, top and bottom curbs, $2\frac{1}{2}$ by $2\frac{1}{2}$ by 5-16 in. angle, and the crown $\frac{1}{4}$ in. steel with a full size dry flute cover, 20 in. by 16 in. oxide dump well being provided in each bottom.

The boxes are supported with steel supports, an overhead track and trolley also being furnished, including a hoist for raising and moving the cover. Gas is admitted through an internal duct connected to top and bottom of box under a protecting hood at the middle. An adjustable damper is used to regulate the flow and divide it between the two layers, located in the inlet duct. After leaving the purifiers the gas passes through the meter to the large gas holder. The large gas holder or floating vessel is the storage reservoir for the gas, and it serves the all important purpose of equalizing the distribution of the gas under pressure, and ensures an unbroken continuity of supply so long as any gas remains in it. In form it is usually cylindrical, inverted, and works freely up and down in the tank. To keep it in true vertical position loose necks are fixed on outer edge of crown on inner lift and brackets at bottom of same, and these carry rollers which work in or against guide rails attached to the tank sides and to the columns or standards.

The Big Gas Holder.

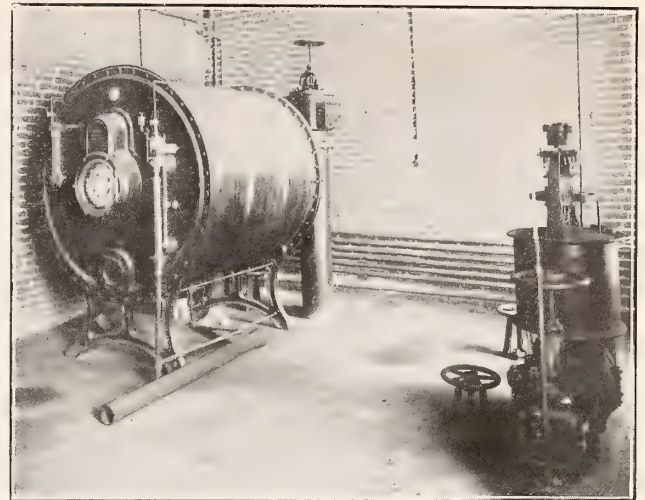
The holder has a capacity of 202,000 cubic feet and is telescopic in two lifts, the inner lift being 70 ft. 8 in. diameter by 25 ft. 6 in. deep. The outer lift is 72 ft. 7 in. diameter by 26 ft. 1 in. deep. When it is made telescopic, it nearly doubles its capacity from a single lift holder for equal dimensions of tank. Ground space and capital are thus economized by its

adoption. Telescopic holders require great care in construction and working; first, to ensure accuracy in the "cupping" of the water space or the seal, known as the cup and grip, this being well taken care of in the erection; second, to prevent the water from freezing in the water space steam ejectors being installed to keep the water above the freezing point. This being neglected would endanger the action of the vessel, causing distortion and would imperil the lighting of the town. There are no counterweights required where the exhausters and governor are employed, and this plant having installed same, the counterweights were not needed as the pressure is equalized through the governor.

Details of Holder Construction.

The crown or roof of the holder is untrussed as the top curb is made sufficiently strong to resist the pressure of the gas exerted on the underside of the roof, which tends to distort the curb. A framework of wood was erected inside of tank to support the untrussed roof when the holder is empty of gas and resting on steel landing beams. The rise in the roof or crown is about 1-20 of its diameter. The top and bottom curbs are the most important members of a holder, and these were carefully designed, both as regards strength and form, to resist the strains to which they are subjected. The lower guide frame of the inner holder consists of a series of channels bolted to the outer lift in a vertical line with the standard which is fixed to the tank, and one intermediately, in which the roller held by brackets fixed to bottom curb revolves. Each outer lift also carries brackets and rollers top and bottom, and the bottom roller is guided by a rail which is fixed to the tank in a similar manner, the top one guided by the standards same as the top roller of the inner lift.

The main standards are made of steel I beams, extending 54 ft. above walk of tank, which are bound midway and top by struts, 24 in. deep, with back and front members braced together by lattice bars, upon which the rollers revolve. Diagonal wind ties of round and flat bars were used to give rigidity to the framing. The tank is 75 ft. diameter, and 26 ft. 3 in. deep. That portion of the storage reservoir for gas which contains the water in which the floating vessels or holder rises, can be constructed either wholly or partly under the ground level, in this case it is on the ground level on a good solid concrete foundation. The tank is made up of steel



Water meter and automatic governor

plates having a walk round the top of tank, also stairway and ladder to the top of standards, the height from the ground level to the top of standard being 80 feet.

Firms Who Were Interested.

The gas holders were designed and installed by the Jenckes Machine Co., Limited, being the first gas holders to be made and installed by Canadian engineers. The water gas plant was installed by the Western Gas Construction Co. The boilers were built by the Jenckes Machine Co., and installed by the Western Gas Construction Co. The oil tanks, having a capacity of 15,000 gals., were built by the Jenckes Machine Co. The plant is capable of making 16,000 cubic feet of gas per hour.



VIEW OF EXTERIOR OF GAS PLANT WITH ONE OF THE TANKS

CONTINUATION SCHOOLS

A MOVEMENT TOWARD DEMOCRACY IN EDUCATION

By G. L. SPRAGUE, B.A.

Principal, Hamilton Technical and Art School

CONTINUATION Schools constitute a step toward democracy in education. Our system of public schools is not fully democratic in its final results. Its courses of study are organized with a view to turning out a product for the universities. From the First Book to the High School the course of instruction lays the foundation for entrance to college or university. This is not a democratic form of public education, if we understand by such, a form of education which meets the needs of the masses. School statistics of almost every town or city will illustrate these statements.

In the City of Hamilton the attendance statistics for years show just what is the falling off in pupils as they advance in school. They show very clearly that our system of public instruction is not preparing the majority of our children for life. Here is what they show:

Three out of ten children entering school reach the Senior Fourth Book.

One out of fifteen children entering school may finally enter the high school.

One out of sixty children entering school may finally go to college or university.

Taxpayers are not acquainted with these facts, otherwise a movement would result which would revolutionize our entire system of public instruction. This is not democratic.

What becomes of over 80 per cent. of the children entering school who leave before reaching the high school? They leave when they are from 14 to 16 years of age. This means that the school system which is organized to promote pupils through a course of instruction designed to fit into university studies fails utterly to secure results commensurate with the expenditure of money involved in maintaining it. The public school system of Canada and the United States is nothing more than a large mesh sieve which loses more than it holds.

Our system of public instruction should prepare children for life. That is the test by which it must be measured. Do the public schools of Ontario prepare children for life? Take the mass who leave school in the fourth book. What preparation have they beyond a very slender grasp of the rudiments of education? They have been drilled in reading, writing, spelling and arithmetic. The public schools take on the average eight years of a child's time to teach him the bare rudiments

of knowledge. If these children leaving school each year had really mastered the rudiments so that they could apply their knowledge to practical problems of business and industry the public schools would deserve commendation. This is not the case. Employers everywhere find these children unprepared for life. The average pupil from the senior fourth book cannot work fractions readily. The writing of most children of this age is a scrawl. When these children leave the public schools to go to work they have nothing to offer in exchange for their wages except their time. The result is that they drift into all sorts of odd jobs where child labor can be utilized at a small wage, and where there is little

hope of advancement into the more skilled branches of commerce and industry.

This is the reason why the present system of education in Ontario and the United States is a system of class education. Its courses of instruction are organized for the few whose parents can afford to send them to the high school and the university, but it fails to reach the mass of the children of the community. Yet the entire community is taxed for this outgrown system of public instruction. It does not fit into modern, social or economic conditions. It does not meet the

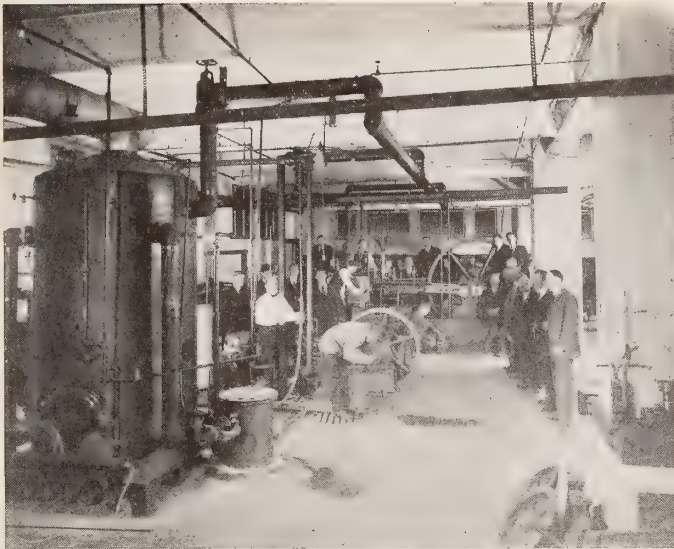
needs of children who are to go to work early in life. It leaves them in a pitifully unfit condition to cope with working conditions.

The weakness of the present system of public instruction is that its forms of instruction are confined largely to book study. This form of study develops the memory faculties more than the constructive and reasoning faculties. It fails to develop in children either initiative or resourcefulness. It confines itself to training the head, and it trains the head merely on one side. The result is a lop-sided product.

Some children take to book-work naturally. They can endure the present abnormal five hours which they have to spend in desks at books, but there is a large percentage of children who do not thrive under this treatment. Many of these children are classed as backward pupils and regarded as sadly wanting in mental power because they do not fit this existing educational mould. The trouble is not with the children but with the system. Our school organization does not



Young men clerking in drug stores in Milwaukee come to Continuation School one or two days each week, where they are aided in their study



A 30-h.p. engine provides a practical means of instruction in valve-setting and engine operation for these young engineers



A laboratory for bakers' apprentices, when they see and have explained the phenomena which often pass without explanation in the ordinary course

take account of the individuality of children. It runs them through the present educational moulds like so much clay. Temperament, individual characteristics, habits of thought, and all that goes to make one child differ from another is passed over. The result is that thousands of children chafe under this treatment, and at fourteen years of age want to leave school.

The remedy for some of the evils of the present system of public instruction lies in the direction of introducing more hand work into the course of study. At present, manual training is doled out to pupils of the fourth book at the rate of one and a half hours per week. At this rate it can never amount to more than playing at a solution of the problem. There should be wood-working and metal-working shops in every public school building; also provision for instruction of girls in cooking, sewing and dressmaking, and home-making. Instruction in these vocational branches should be given to all pupils from 12 years of age and upwards regardless of their standing in book studies. The time devoted to these subjects should be at least one hour a day, more would be desirable. Mechanical drawing and arithmetic should be related to the handwork of the boys, and the arithmetic for girls could be correlated with their work in cooking, sewing and home-making. The children would then secure a training that would prepare for life. Reading, writing, spelling, arithmetic, geography and history could all be made to centre about things in which pupils would be vitally interested.

To provide a larger element of vocational training in public schools would mean lengthening the present school day. Public schools now operate five hours per day, from 9 to 12 a.m., and from 2 to 4 p.m. Millions of dollars are now invested in school plant and equipment that is used five hours a day, five days a week, and ten months of the year. The use of public school property shows the greatest waste of any public or private investment in

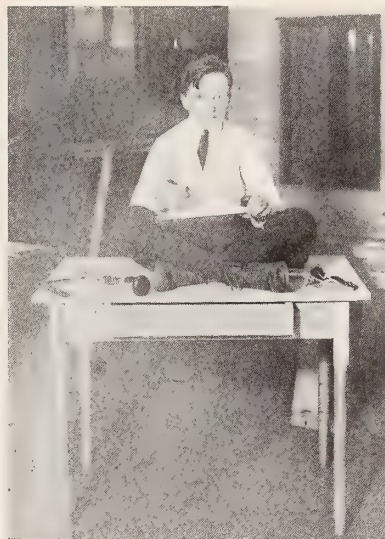
existence. A longer school day would not injure children if it covered a wider range of instruction in hand-work as well as academic studies. And the results as concerns the citizenship of the nation would in a few years be so noticeably superior to what we have endured for generations that men and women would wonder how they ever did permit the present forms of public school instruction to continue for so many years.

Continuation schools offer another solution of the problem. They are designed to meet the needs of the mass of children who go to work at fourteen years of age each year. These children enter the ranks of child labor. They perform the simplest tasks in business and industry. In large industrial centres they are employed by thousands in shoe factories, textile and garment factories, in messenger and store service. Child labor presents a serious problem both to educators and leaders of our nation. In the United States, child labor assumed alarming proportions before steps were taken to regulate it properly. It took the great anthracite coal strike of 1909 to reveal

some of the evils connected with the employment of children in Pennsylvania mining districts. It has taken ten or fifteen years of strenuous effort on the part of the National Child Labor Committee to promote legislation in the several states of the Union that safeguard the rights of childhood by regulating hours and conditions of child labor. Over twenty states now limit the hours of work for children under 16 years of age to 8 hours per day and 48 hours per week.

A Federal Child Labor Bill has been passed which shuts out of inter-state commerce the products of children when the hours and conditions under which they labor do not conform to this 8 hours per day and 48 hours per week standard.

The child labor problem is not so aggravated in Canada, but danger lies in our neglecting to provide proper regulations now. With the growth of large industrial centres, and the development of our pro-



**A Project Completed
A boy and a table**



A millinery shop for the girl with a prevocational or vocational aim

ductive enterprises of mill and factory, this problem will be upon us and we shall have to meet it. Child labor is a menace to the welfare of any community or nation, chiefly because it offers no hope of advancement. It is merely a temporary use of a child's life for two or three years. Take any industry where children under 16 years of age are used in large numbers and you will find that the industry does not absorb these children. That is, the industry does not provide jobs higher up for them as they advance in years. Child labor jobs pay from \$3.00 to \$7.00 per week, teach nothing in particular to any boy or girl, offer nothing better, train for nothing higher. The result is that a child takes one of these jobs at 14 years of age, works for a year or two, reaches the maximum wage of the job, then leaves because the job will not pay higher wages and because it is so easy for the employer to secure another child of 14 years of age to do the work. This is true of the textile industry, shoe factories, box factories, candy factories and of many other forms of child labor. They lead nowhere, but up a blind alley.

Thousands of Child Workers.

Continuation schools meet the needs of the mass of child workers of the nation. We are unable to secure statistics to show the number of child workers in Hamilton, Toronto or other large cities of Ontario, but there are thousands in these and other Canadian cities. We have no legislation regulating either their hours of work or working conditions. There is however a splendid piece of legislation which should be put into operation in every city of the Province of Ontario. This is the Adolescent Attendance Act. The law gives local Boards of Education authority to provide continuation schools and to compel the attendance either in the daytime or evening of all children under 17 years of age who leave school before completing the fourth book.

The Adolescent Attendance Act was passed by the Ontario Legislature in 1916. It is the first notable step taken in this Province to do something for the mass of the children who leave school each year, only partially fitted to make their way in business or industry. For several years the Provincial Government has been making generous grants in aid of technical education. These grants have stimulated the organization of evening vocational classes in various cities; also the organization of general industrial classes in the daytime for boys and girls of 14 years of age and upwards. The Adolescent Attendance Act fits into the scheme of technical education in this Province. One thing more is needed to complete the work, and that is to make it compulsory for local boards of education to carry out the provisions of the Adolescent Attendance Act. It will never be successfully carried

out on an optional basis. The problem is too vitally related to the welfare of the nation to leave to the option of any local board of education. Conservatism may in some communities forever block the wheels of progress.

Several States on the other side of the line have experimented with continuation schools. Their experience shows just what progress can be made under the optional plan and what takes place where such a law has a punch to it.

Compulsory Schools.

In 1910 the Wisconsin State Legislature appointed a commission to investigate various forms of vocational education. The secretary of the commission made the investigation. There was nothing obtruse or highly complicated about the problem. This commission reported in 1911. Their report can be read in an hour. They recommended the establishment of continuation schools on a compulsory basis.

Dr. Charles McCarthy, Legislative Reference Librarian of the State of Wisconsin, was the secretary of that commission, and he wrote that part of the report which deals with continuation schools. He is the father of continuation schools in America. The 1911 Continuation School law of Wisconsin was unique in many respects.

This law made it mandatory for local boards of education in every town, city and village of 5,000 and upwards to appoint a separate Board of Industrial Education to have charge of the development of continuation schools.

This separate Board of Industrial Education was composed of two employers and two employees, together with the city superintendent of schools. The object was to create a small board of men who would understand the needs of the pupils to be trained in continuation school classes.

Then the law made it mandatory that wherever there were twenty-five persons qualified to receive this form of instruction, the Board of Industrial Education must start the work.

This law made it compulsory for all children between 14 and 16 years of age who had left school, to attend the continuation school one-half day each week.

Instruction Prescribed.

The instruction prescribed covered English history, physiology, hygiene and vocations. It was a great task to develop this form of instruction, but everywhere local boards of education appointed the separate boards of industrial education, and these men went to work with a will. They did not wait to construct new school buildings. They rented store buildings, utilized school buildings where they were available, and in two years had continuation schools in thirty

cities with an enrolment in day and evening classes of over 30,000.

In the last six years this work had advanced by leaps and bounds in Wisconsin. Employers opposed the enforcement of this law in 1911. Some said it would cause too much trouble to permit children to attend school one-half day each week; that it would disorganize their business. The reverse has happened. In 1914 the employers of Wisconsin supported an amendment which made it compulsory for children from 14 to 17 years of age to attend the continuation school one-half day each week.

Best Types in Wisconsin.

The best type of continuation schools in Wisconsin are in Milwaukee and Racine. In Milwaukee instruction is provided in cooking, sewing, dressmaking, millinery, applied art, English for foreigners, business English and arithmetic, bookkeeping, mechanical and architectural drawing, architectural design, commercial law, pharmacy, stenography, printing, chemistry, salesmanship, steel and concrete construction, shop mathematics, automobile mechanics, steam engines and boilers, gas and gasoline engines, electricity, estimating for contractors, woodworking, sheet metal work, and plumbing.

The compulsory plan of establishing continuation schools secured splendid results in Wisconsin. Conservatism had to give way and the work advanced. In 1913 Massachusetts passed a law providing for continuation schools on an optional basis. This law gave school committees authority to initiate the work. What is the result to date. One city, Boston, has established continuation schools, while the need prevails in a score or more cities in that State for just such schools. Fall River, Lawrence, and New Bedford, with thousands of children employed in their textile mills should have continuation schools, but they will never get them on the initiative of the local school committees of these cities. Boston has a fine system of continuation school work with about 7,000 pupils.

When the Legislature of the State of Pennsylvania passed the Child Labor Act of 1915 with the provision for continuation schools, they followed the Wisconsin plan. The Pennsylvania law makes it compulsory for children between 14 and 16 years of age, who have left the regular schools, to attend the continuation schools one day each week. There was a storm of protests from employers, especially those of the textile industry when this law was enacted. There were over

12,000 children under 16 years of age in the textile industry alone, 5,000 of them in Philadelphia. In the State there were over 80,000 children under 16 years of age working at various occupations who were affected by this law. In January, 1916, continuation schools were started in Pennsylvania. To-day there are over 12,000 attending the continuation schools of Philadelphia alone. The director of industrial education in Pennsylvania states that after a year's experience the law has proved successful.

Continuation schools constitute a tremendous advance in education. They are the schools of the people, having not only part-time day classes but also evening classes for instruction in a wide range of vocations.

No class of workers is more in need of continuation school training than children between 14 and 17 years of age, who are now engaged in such large numbers in the simple tasks of mill, factory, store and messenger service.

Continuation schools are first of all vocational. Shops are equipped with tools and machinery for instruction in wood and metal working, cooking, sewing and home-making. As the work develops a great variety of trade instruction may be given, as is now being done in the Milwaukee continuation schools. Instruction is also given in English, history, industrial geography, and arithmetic.

Value of the Training.

What is the value of this training? It develops girls into better home-makers, trains some for trades, and gives them a larger opportunity in life. It gives boys elementary trade training, helps them to discover their ability along mechanical lines, and enables many to enter an apprentice shop and become skilled workers.

Continuation schools are a great thing for employers of children of this age. This five hours or more training each week makes these children more capable workers. But the important thing is that continuation schools give employers of this class of labor an opportunity to discharge an obligation. Every employer of children between 14 and 17 years of age in what are commonly known as "blind alley" jobs, is under obligation to give these children some opportunity to develop themselves. A few dollars per week in wages does not discharge this obligation. If we are ever going to make the industrial life of this nation what it should be, employers must recognize the right of these young workers to grow. If

(Concluded on page 1422.)



Department store girls getting a practical drill in arithmetic in a continuation school



Plant of the Canada Cycle & Motor Co. as it appeared when nearing completion

AN INTERESTING NEW PLANT AT WESTON

Description of the recently completed premises of the Canada Cycle & Motor Co., Limited

THE chief interest attaching to the new factory at Weston, Ont., recently completed for the Canada Cycle & Motor Co., Limited, rests in the ideal working conditions which are provided in both the location and layout of the plant. The building virtually stands in the country with green fields adjoining it on three sides. At the same time it is within almost a stone's throw of the business centre of the town and is right alongside the lines of the Canadian Pacific and Grand Trunk railways. The Russell Motor Car Co., Limited, of which the Canada Cycle & Motor Co., Limited, is a subsidiary, owns considerable land in the vicinity, on which other plants will be erected from time to time.

All on One Floor.

Added to the healthful advantages obtained from locating a plant in the open country, the arrangements are such as to contribute still further to the efficiency of the producing organization. Except for a section at the front of the building, in which the store-rooms and general offices are located, and which contains an upper floor, the structure is but one storey in height. This helps to secure economy in operation, for the raw material enters and the finished product emerges without the expenditure of any greater energy than is required in moving it forward from department to department on the one level. Not only is power thus conserved, but time is saved, for it is easier and quicker to route material around a factory, when the processes are all carried out in departments adjoining one another, than to raise and lower it by means of elevators from floor to floor.

Another valuable economy which is made possible in a one-storey structure such as that of the Canada Cycle & Motor Co., is light. Not only is light available from all sides of the building, but it is poured, in abundant quantities, through the roof. A special monitor construction has been devised and so arranged as to give east and west lighting. The result is that a floor area of 280 x 208 feet, is rendered almost as bright as the outside

of the building. The front two-storey section of the building is 280 feet long and 50 feet deep. It is of reinforced concrete and brick construction. The foundation piers are of concrete and the first storey has reinforced concrete columns, 14 inches square and placed at 16 foot intervals. The upper floor has concrete girders, 14 x 30 inches, with a combination hollow terra cotta and concrete joist floor, measuring 10 inches in depth. Both the first and second storey walls are of brick. The roof is flat and of wood sheeting on steel wall-bearing girders, covered with Johns-Manville prepared roofing. The floors are finished with cement or linoleum.

There are two entrances at the front of the building, one for the male employees leading directly into the factory, and the other for the office staff and female help. The general offices are located on the upper floor to the left and are bright, airy and commodious, with a pleasant outlook across the country. In this portion of the building and on the ground-floor one finds an emergency hospital, which is fitted up in the latest approved style. There is also ample locker room and a rest and lunch room for the women workers.

Style of Construction.

The factory proper, which, as already mentioned, is a one-storey structure measuring 280 feet by 208 feet, is entirely of steel construction. There is no basement and the foundations are small concrete pedestals with spread footings carried down to a minimum depth of 3 feet, 6 inches. Each pier takes a column, the cross-sectional area of the pier being varied to suit the loading requirements. The outside columns are supported on continuous foundation

walls of concrete, with spread footings, on which the outside brick walls are built up. The columns are placed at 16-foot intervals in one direction and 40-foot intervals in the other, with steel roof trusses spanning the long bays. The outside walls are of brick, carried on the concrete foundations, and are 9 inches thick between columns and 13 inches



The Site was originally open farm land



View during construction showing special monitor roof

thick at the columns. Steel window frames, extending from the sills to the eaves, are used. The roofs are of 2 $\frac{3}{4}$ -inch tongue and groove sheeting on 6 x 10-inch rafters, carried on the steel trusses. Drainage is carried through interior down-pipes and outside eaves. The floor of the factory is of 4-inch concrete on a 2-inch cinder base, with a 1-inch cement finish coat.

A separate power house, with a stack 125 feet high and 5 feet 6 inches inside diameter at the top, completes the plant. This power house measures 30 feet 2 inches by 62 feet, and is built with brick walls, the roof being carried on wall-bearing steel sections. The equipment consists of two return-tubular boilers of 300 h.p. capacity, with provision for doubling the installation in the future. These boilers were manufactured by the John Inglis Co., Limited, and are equipped with Jones underfeed stokers. A steam-driven air compressor, made by the Canadian Ingersoll Rand Co., furnishes compressed air for brazing, sand blasts and other shop processes. There is also to be found in the power house a fire pump for supplying water in case of a breakdown in the local waterworks system. It is the product of the Canadian Allis-Chalmers, Limited. It connects with a 100,000 gallon underground tank, 52 feet in diameter and built of reinforced concrete. The chimney was erected by the Canadian Custodis Co.

Fire Protection.

The plant is equipped throughout with a sprinkler system, which is connected up with the Weston water mains. In case of a breakdown in the town mains or pumping equipment the fire pumps and underground reservoir would be pressed into service. The sprinkler system was made by the Adam Clark Machinery Co.

Indirect heating is employed in the factory with a series of three steam-operated fans and ducts, which convey warm air to all parts of the workrooms. In the office section direct radiation is employed, the exhaust steam being used for the purpose. Steam is also used in the heating of dry kilns and enamelling ovens, while power for the various machines is supplied by electric motors. The heating system is that of the Canadian Buffalo Forge Co., and the enamelling ovens were manufactured and installed by the Brantford Oven & Rack Co.

In connection with the erection of the building, the steel

work of which was put up by the Macgregor, McIntyre Co., some special methods were employed. The large ground area of the building made steel erection more or less intricate, and for this reason special devices were employed to facilitate operations and allow the steel to be erected with the least interference and at the same time with speed. Materials were shipped to a railway siding, located about 200 feet from the building, where a wooden unloading derrick transferred the steel to a motor truck, which carried it to the site. For erection a special traveller was rigged up, consisting of a wooden stiff-leg derrick mounted on a frame fitted with wheels and running on rails having a 30-foot spread. This frame was made of H section beams. The derrick had a wooden boom 77 feet long and was equipped with a steam hoisting engine providing power. The rails were laid on three sides of a square within the area of the building, the entire series of roof trusses being placed by the traveller operating along these tracks. The traveller was started at one side of the building, and it erected all of the trusses in front of it. When it reached close to the other side, the frame was jacked up and the wheels turned at right angles, the traveller then running down that side, erecting trusses as it went. The remaining steel was erected by operating the derrick along the third side of the square. The trusses were shipped to the job already fabricated in 40-foot lengths, and were erected in this way. The length of the boom enabled the traveller to cover a wide sweep. The methods were devised for speedy erection, since the intention was to build the factory against time. The labor conditions, particularly a shortage of men, hindered operating and retarded the work very considerably, however. One erector gang did all of the work in connection with the erection, and helped in unloading as well. To show how speed was provided for, the wheels of the traveller were not fastened by fixed collars, but were free to slide transversely on their axles so as to accommodate any irregularities in the setting of the rails. This means that the rails do not need to be laid with a great deal of accuracy.

The principal outputs of the factory are bicycles and skates. About 524 hands are employed, with a weekly payroll of \$8,000. Nine hundred bicycles per week are manufactured and these are shipped all over Canada and to Australia, New Zealand and the United States as well.



The steel skeleton before walls were erected

IMPERIAL INDUSTRIES AFTER THE WAR*

By OCTAVIUS C. BEALE

Representative and Past President of the Australian Associated Chambers of Manufacture

A WORTHY padre tells the following anecdote: "Mortally wounded at the Somme, a British Tommy wrote to me this last message: 'With a good heart I die for England.' When I first knew that boy he was shoeless and his clothing hung in rags." An everyday commonplace story, glorified by the admirable patriotism and adorable self-sacrifice of the young man. But the story illustrates also diabolized or apotheosized *laissez-faire*, just as our individual politics may cause us to regard it. Some of us declare, whilst others deny, that it is the duty of the State to make sure of provision for all honest citizens—to see that each shall have opportunity to earn an income. Was justice done to that boy and his like before the war? And when it is over are we to revert to like conditions as being everyday and commonplace?

Preference or Protection.

Several years ago a prolonged discussion, occupying three days, upon the question of Imperial Preference took place at a Congress of Chambers of Commerce and of Manufactures of the Empire held in London. The manufacturers of Canada pronounced themselves in favor of Preference, which necessarily involves tariff differentiation. The venerable Lord Avebury—since departed—in speaking against it, said that a great advantage which the children of the poor enjoyed in England, as compared with those of Canada, was that under the English system of free imports the food and clothing of the children were obtainable at the lowest possible prices. It fell to my lot to follow him, in speaking for the other side. I was able to say that, having visited all the Provinces of the Great Dominion, I had not seen one shoeless, half-clothed or half-fed child, for the reason that the avowed policy and practice of the governing powers are to see that their citizens be adequately protected in every form through life. Further, if the kindly nobleman, whom we all held in honor, would accompany me I would find him a hundred thousand children within a three-mile radius from Cannon Street insufficiently clothed and fed. The statement of the best-informed man in the United Kingdom—Mr. Charles Booth—that four millions of the people were submerged into starvation had never been refuted.

Well, then, the war has come to end or to extend that state of things. With all our troubles, it looks as if the whole people in the interim are as well, and even better, fed and clothed than they were before. We find huge workhouses, so-called, transformed into military hospitals, whilst the former inmates, we are told, have returned for the most part to real work and with very satisfying remuneration. Once more at the parting of the ways, the Mother Country must make a decision to protect or to neglect. All that is worth having is worth protecting. Nothing that is worth having may be neglected.

The phrase "Political Economy," so prolific in mischief to mankind, was used for the first time by Mountchrestien de Watteville in 1615. François Quesnay and his friends long after adopted and spread its use. Quesnay, in overhaste for celebrity, announced his discovery of the quadrature of the circle. It was a trifling solecism compared with that involved in the jumbled concept "Political Economy" itself. As we can have "household laws" (*oikos* and *nomos*=economy), so logically we can have national economy without overstraining the simple idea. And much of the enormous mercantile,

manufacturing and maritime success of the Germans is due to the clear-sighted men Friedrich List, Gustav Schmoller and their co-workers, who threw overboard the fetish so worshipped in England, to establish in its place the sound principle of *Volkswirtschaft*. The only equivalent is our word "protection" in its widest meaning. In periphrase it means conservation of national interests, than which there is nothing more loyal and laudable. But that is in deadly opposition to *laissez-faire*, which phrase M. Yves Guyot declares to be "the first formula of political economy," the other exponents being in full agreement.

The late lamented William McKinley, a true lover of his country, only a week before his cruel death, said that during his Presidentship no foreigner could claim he was better off because of McKinley's fiscal policy, and no American citizen could say that he was himself worse off. From the American standpoint of isolation, that was a just and loyal claim. It is their traditional policy to take all they can, as a Government, and give nothing—quite defensible and very much defended. Our case is altogether different, for we have been fighting rapacious enemies by co-operating with true and tried friends, who with us have risked all for the common life and hope.

All that we owe to neutrals must be paid for in cash, for beyond humanity and friendship there is no more obligation to any of them than that implied in the succinct speech of President McKinley. Nothing venture, nothing have; whilst inversely our duty is to those who have ventured their all with and for ourselves. That is justice itself, and justice exalteth a nation.

It remains, then, to indicate in what ways we can and must assist, by forming a column of mutual strength and support, the British family of nations and our glorious Allies.

Not merely the inconceivable losses brought upon the Allies by the great war, but the incalculable cost of restoration and the burden of pensions, added to the vast indebtedness that will be incurred hereafter by indispensable imports from neutrals at exorbitant prices, impel us to associate for the common relief. No indemnities that may be inflicted upon our enemies will suffice to recoup us. The most that can be obtained will be interest at a low rate upon the principal sum. The bill will be passed on to their posterity and our own.

The Illustration of Sugar.

But immediate help and strength will be found in development by each member of the Alliance of its productive powers, especially in what are loosely called raw products. Most of these are in themselves manufactured goods, yet they become, for the use of others, manufactured materials. Of such, one of the most important and illustrative is sugar. We may best study it in relation to the United Kingdom itself. And here let me say that there will be no attempt to treat this or any other item exhaustively, but rather to seek, by displaying concrete examples, to set forth the principle and effect of preferential Allied interchange.

The United Kingdom requires at least 2,000,000 tons of sugar per annum, and much more if her sugar-using industries are to be developed as they ought. Of these 2,000,000 tons, 1,300,000 came from Germany and Austria. The whole was imported, and Germans sent twice as much to us as we received from the rest of the world. You know the familiar story of British sugar-refining under political economy as against what it might have been under national economy.

*Paper read before the Colonial Section of the Royal Society of Arts

Less than a century ago Britain refined all that she used. Thirty years ago we still produced five-sixths from imported raw sugar with the added benefit of the by-products. Of late only one half was manufactured in Britain, the industry falling into few hands and the others being frozen out by the free blasts of competition through our open door. The foolish foreigners—according to the gospel taught in our schools of learning—made a present to this nation by placing bounties upon exports, though with the avowed object of displacing our industries so as to retain a huge balance of national profit to themselves. They secured the turnover, enlarging the fertility of their soil for other products, encouraging the manufacture of machinery, providing cheap food for animals from the offal, remunerating chemists and furthering chemical research—these and other gains all at the same time, and all for Germany.

Yet the British Empire is well able to produce the sugar it requires. Disaster fell upon sugar-growers in the Crown Colonies, and had not our Oversea Dominions adopted a policy absolutely antithetic to that of the Mother Country, extinction must have followed there also. Canada came to the rescue of the West Indies, whilst Australia fought out not only the question of local production, but also that of the employment of white labor.

Whilst colored persons, whose manner of life and forms of expenditure under very low remuneration added nothing to national strength and progress, were only able to turn out 80,000 tons a year, our white British Australian citizens have approximated a yield of 250,000 tons. The industry maintains a school of chemists of pre-eminent ability, and, moreover, workers and farmers are well paid. Say the duty is two-thirds of a penny per pound, there are against that the great advantages of subsidiary trades, of support to steamer services, of cheap molasses for stock, of spirits for industrial purposes, of support to technical education and to advanced agriculture. And the entire gross value is extracted from the soil. Is that not enough? Why, then, allude to military strength, to multiplication of the British race, to the triumph of the industrial example? To say nothing of the fact that when the supreme trial of war finally came—as we knew it must come—the Australian citizen gets for threepence what now costs the *laissez-faire* Englishman sixpence. And all along the retail price of sugar in Australia was moderate.

Need we enlarge? Is the lesson not obvious? I am assured by the highest authorities in Mincing Lane that—apart from very probable rise in labor cost everywhere—a price of about \$12 per ton for raw sugar, f.o.b. in the country of production, can be reckoned upon in the British Empire. In the French and British Possessions there are sugar lands yet to be reclaimed, and sufficient labor available to supply all possible requirements of the Allies. As already alluded to, the offal from the industry, both from cane and beet, is highly valuable for meat production—that want, of all others, which is sure to be accentuated in the coming years.

True, the sweetening value of beet compared with cane sugar is as 12 to 14, yet the advantages to be gained by Great Britain are so great that every effort should be made to foster the industry, and to do so protective duties, or an equivalent bounty, must be provided. Once the industrial principle be admitted—namely, that it is a duty of the whole people to see that the whole people shall be provided with opportunities to earn incomes adequate to civilized existence in decent comfort—then the governing powers will neglect no beneficent industry. They will add up the advantages to the nation, which are not always measurable in coin. The very expenditure, which is debited *in toto* by the political economist, is often of itself a cause of gain, deny it as he will. The mechanical instruction, the chemical practice and experi-

ment, the example already mentioned and the industrial experience gained—applicable and often applied to other forms of production—are imponderabilia which the political economist omits from his estimates. There is one quality which we manufacturers, in common with all business men, value perhaps more highly than any other—perception. The possessor of it may be a lazy fellow, like the boy Potter, who invented the slide-valve, yet we are glad to buy or hire it. That is what each industrial development brings in its train—cultivated acuteness. To beet-sugar production and all else the same observations apply. You cannot instal a new industry without helping many others.

But contracts are now being offered in Mincing Lane for German sugar—so says “the trade”—for delivery when peace is declared. Are we going to allow business to the extent of £15,000,000 a year to leave the British Empire, as before the war, to strengthen quondam enemies? Yet powerful co-operative bodies are suggesting this, who are themselves large purchasers. As prices will be much higher, so the fifteen will swell to twenty millions sterling.

No Zollverein Possible.

Whether the country be large like Canada or Australia, populous as Great Britain, or smaller like New Zealand, the West Indies or the Falkland Islands, the ruling powers will make their own separate fiscal arrangements to a certainty. It is chimerical to suppose that there can be arranged a Customs Union—a Zollverein, as our Free Trade friends so love the German word. In twenty years it would be impossible to start such a convention, and its failure were inevitable. Free reference is, however, not only assured, but it is a fact of existence. The Political Economists thundered at us who consistently fought the battle for sense and right—*sensus communis* in its highest meaning—that if we succeeded we should break up the Empire. Free imports alone, said they, would ward off war and win for our nation universal love and respect. We behold the result!

Britain followed out the folly to its bitter end. The eager affection of her Oversea sons counted for no more, fiscally, than the malevolence or indifference of aliens.

At the very time when Britain was being lulled to sleep and her prophets and wise men scorned, Australia was steadily exerting herself to do her bit in providing both army and navy. The aim was to have within a few years 800,000 trained men, even partially trained, at call. From which fact alone it should be plain that the Oversea nations of the Empire will and must make their own fiscal imposts and arrangements. The influence of Lord Haldane and his fellow thinkers could not be allowed to dominate the perceptions of Oversea electors. Compliance could not be enforced, and thus agreement alone can operate.

Allied Preference in Basic Material.

Schemes of Imperial cohesion, plans for inter-state and for Allied preference, usually embrace only dealings with manufactured goods. In connection with these, concessions are to be made in one form or other by way of rebates in import duties. The method is important, even requisite, and has the merit of simplicity *plus* experience in practice. But the very heart of the subject is elsewhere placed.

Sheep and Wool.

The supply of materials—constantly but wrongly called raw materials—is basic to all manufacturing industry. Monopolists know all about that, but serenely say nothing. They only ask for *laissez-faire*—desire nothing more than to be tenderly let alone. But it behoves the Allies to unwind the tentacles of these octopods and, if the unwinding be too troublesome, to cut them.

A combine controls the meat industry of the United States, has spread its control to Argentina, and is making vigorous attempts upon Australia and New Zealand. It encounters grave difficulties in Australasia, yet its immense success in dollar-raking over America and Europe suggests that the same procedure is practicable for wool and hides. The colossal aggregations of capital seeking wide engagement, consequent upon the great war and accumulated in America, could find no more ready and profitable employment unless we be alert to prevent our own enslavement. British companies with pastoral holdings in Australia—often of great extent—may individually sell out to an American combine. Separately and seriatim, Australian persons and companies may do the same, and the purchase-money be withdrawn, as it mostly would be. That is not gain but loss to Australia. The ever-augmenting profits will be transmitted abroad, whilst wages and working expenses would be paid alike in either case.

The number of sheep in any country varies greatly with the seasons, but we may reckon as follows: The principal wool-exporting countries are Australia, owning 85,000,000 sheep; New Zealand, 25,000,000; Argentina, 85,000,000; and South Africa, 27,000,000. Of these the only one tending to an increase of its flocks is South Africa. There are 20,000,000 less sheep in Australia to-day than twenty-five years ago. In my calculations I have taken three-year periods so as to correct divergences because of seasonal effects or of interruptions in shipping. Thus for 1901 I take the average of 1900, 1901, and 1902, or for 1912, the average of 1911, 1912 and 1913, that our guidance may be safe. Thus we see that in 1900 the wool exports (not production) of Australia were 540 million lb. weight, and for 1912, 800 million lb., or an increase of 50 per cent. The industry is inherently healthy, but trammelled by illiberal conditions that we need not here discuss. The wool exports of South Africa in the same dozen years have enlarged from 76 million lb. weight to 176 millions—much more than double. In the newly-extended dominion of the South African Union there is fair prospect of wide expansion in the pastoral industry. The fact that private enterprise has improved the capacity of the sheep in wool-bearing has nothing to do with the falling-off in numbers. That is attributable to political mismanagement, which is a history to itself. Meantime the demand for wool is stronger than ever, and must for a long time remain unsupplied. There is no trust, no control, no concerted arrangement among the producers themselves to carry over from one season to the next or to withhold supplies when foreigners conspire against the producers' interests.

The whole United States possess barely 50,000,000 sheep, and Canada only 2,000,000—an inadequate total for more than one hundred million people.

The production of Great Britain has been stationary for a dozen years.

No further demonstrations is needed of the necessity for preferential treatment of the exportable yield of the Empire in favor of ourselves and our Allies, particularly when we reflect that the deficit in production of the best of all clothing material enlarges annually. It must continue to enlarge until the political treatment of the waste lands of Australia becomes more just or more generous.

Horned Cattle.

In relation to cattle, I need not burden you with the statistics which are before me, for it suffices that similar conditions prevail. The world faces meat shortage and again an enlarging deficit. With that fact both Americans and Germans are perfectly acquainted. Again, in this respect—possession of horned cattle—the United Kingdom is stationary for a dozen years. Canada and New Zealand show a small increase.

British India—assuming that the published figures are reliable—shows an increase from 85 to 112 millions in cattle over a stretch of years.

Hides and Skins.

Now, a significant tendency has been for the United States and Germany to derive in ever-increasing quantities from Imperial flocks and herds another basic material of vast importance—skins and hides. There is no effective substitute for leather, and prices continue to advance.

Jute.

Of this India is sole producer. The production has increased as follows: In 1900, 2,000,000 acres, with 1,200,000 tons; in 1914, 3.1-3 million acres, with 1,900,000 tons. Here is an article under complete control wherewith to assist ourselves and our Allies.

Once more permit me to remind you that the items and figures adduced are not comprehensive but illustrative, else you could not see the wood for the trees.

Cocoa.

Reckoned in short tons of 2,000 lb., the exports of the producing countries of the Empire have been so augmented as to show, in 1900, shipments of 29,000 tons, and in 1912, 90,000 tons.

But of all products the most remarkable progress is shown in

Rubber.

which from 9 million lb. weight in 1900, advanced with steady and rapid increase to 96 million lb. in 1913. There are £95,000,000 of British capital invested in the rubber-producing industry, and our share of the world's supply is 92 per cent.—say, eleven times as much as that of the rest of the nations added together.

Leather.

Not merely of hides, skins and leather itself, but of invaluable tanwares—cutch, myrabolans, wattle-bark, hemlock, chrome—our Empire produces for all the world. Without the control of hides and skins from India Germany will be in a bad way. Well-informed Indian officials have told me, "We were running India for the benefit of Germany."

Ministers in Australia have long ago seriously considered the question of imposing export duties upon hides, in order to conserve the tanning trade—the Cinderella of industries. Bark of the Australian acacia is an important product of South Africa, and though its cultivation in Australia has been neglected, it is perhaps, all round, the most valuable of the tanwares.

Cocoon Oil.

The absence of its manufacture from England is due to the wilful choice of Englishmen to erect factories in Germany so as to extract it there. Perhaps it is merely to exemplify the high principles of political economy so to sink their capital in a foreign State, employing labor there, filling German steamers with imports and exports, supplying excellent food for man and beast—to the deprivation of Britain—and the best material for detergents. Perhaps it was merely *ubi aurum, ibi patria*—policy of economy, and the devil take the hindmost. Many of us who travelled in Germany were amused by the queer jumble of words that stared at us from countless hoardings and from hideous newspapers—"Sunlight Seife." It is up to England to see that her own farmers get the benefit of the oil-cake, the by-product grown in her own Oversea domains, and that her Allies get a share in it too. And it will be no waste of time to watch keenly the pacifist influence of the whole soap-boiling trade. It had an octopus power of absorption, but Germany has stuck in its throat.

From the examples cited will be readily seen our power to benefit both Empire and Allies by ordered co-operation.

Illustrations could be multiplied *ad libitum*, especially by including the whole range of metals and minerals excepting potash. The latter can also be found if systematically sought for.

The War as Schoolmaster.

Fas est et ab hoste doceri. Before me are a number of copies of the *Kölnische Zeitung*, and it is not only a fair thing, but a very necessary thing, to be taught by our enemy. At least, it is wise to acquire knowledge of what he is teaching his own people. It is sure to come in handy later on, and the ostrich attitude will not help us at all. We dare not ignore the psychology of the Germans. The same man will be lachrymose one minute and savage the next. He will be querulous and critical, then obedient as a child to superior authority. He can be kindly and cruel, suspicious and credulous. Obsequious to servility, he will tell you stories of his multitudinous rulers and royalties, as also of their ancestors, that would put Suetonius and Macrobius to blushes. Such works as those of Clausewitz and Treitschke could not be written by a Frenchman. No Englishman could produce Krafft Ebing's awful "*Psychopathia Sexualis*." So, too, with the daily press. It is, of course, for Germans, and its leading matter is of late a long-drawn whine alternating with coarse boastfulness. I translate some extracts:—

"The war," says the *Cologne Gazette*, "burst upon us as the consequence of a deliberate policy, which is provable by documents, carefully devised for the encircling and suppressing of Germany, the undermining and destruction of Austria and the partition of Turkey. It was based upon the hope that the numerical superiority of the forces of the Entente, which had itself been reformed and enlarged, would find internal support and help from party oppositions in Germany, from national animosities in Austria-Hungary, and from weakness of Turkey, towards the subjugation of Germany and her allies. The declarations of our enemies prove that their war aim is permanently to weaken ourselves and our associates, so that we, in contrast with the aspirations of England, France and Russia towards a world-embracing policy and control, shall be condemned henceforth to the position of a State of secondary rank. We are to be forced into a condition of chronic anæmia in the domain of world-policy. The partition of the planet of dominions and spheres of influence, together with the exploitation of the world's markets, is as far as possible to be completed without us. That they still, even now, hope to attain their goal, and that, if they gain the upper hand, they will carry out this programme restlessly and ruthlessly, our enemies leave us no room to doubt." The conclusion, drawn at too great length for full quotation, is that a peace must be forced through first of all, in which the pledges, the forfeits, that Germany has won from her foes, and will hold at her absolute disposal, shall procure such terms as will secure her position hereafter, for her war aims never included the idea of making conquests, as has been the invariable practice—so declares the veracious *Gazette*—of England. Another number contains an illuminating article upon:—

"England's Strongest Weapon—The Press."

"Its excellent cable service," says the *Kölnische Zeitung*, "in all parts of the world is a powerful weapon of the State, and ever since the outbreak of war has only too well proved itself as such. More even than the technical does the intellectual rule in its handiwork, guided by unswerving power of will and by long experience. In the leading articles of the English daily press during the war a great art is manifested in dealing with the separate nations according to their idiosyncrasies (*die einzelnen Völker nach ihrer Eigenart zu behandeln*), at one moment to strike the chords with severity, the next with brutality, then again with flattery, just as they

hope to win success. Others again must be won by surprise-attack or by simulated probity." Then follows a column of abuse more amusing than instructive.

International Fairs.

But the same paper affords us a valuable finger-post in its report of Dr. Stresemann's speech in the Reichstag upon the question of the Leipzig Fair. Deputy Carstens had said:—

"The importance of the Leipzig Fair for our trade, our industry, and our workpeople is proverbial. Every possible effort must be directed towards maintaining the Leipzig Fair in its present importance. Germany, her trade and industry, her technical schools and her science, will constantly take care that the Leipzig Fair shall never be conquered. In view of the exertions of our enemies to continue a trade war even after the war, we must place all means in the hands of the Government, so that it may oppose successfully all assaults upon German industrial life."

Agreeing with the foregoing, Stresemann said, *inter alia*:

"I am of the opinion that the proposal for State assistance to the Leipzig Fair is the obvious reply to the efforts of our antagonists to continue an economic war against Germany after the war. And just here in the Leipzig Fair we have the possibility of giving an answer to them. Even during the present war France, as well as England, has attempted to break through the old world-monopoly (*das alte Weltmonopol*) which the Leipzig Fair has won for itself through its conspicuous accomplishments in connection with the quality of German goods. England, which was formerly not only the land of Free Trade, but also in so far the land of free competition, as it almost never placed any State means at disposal for the support of industrial efforts (*wirtschaftlichen Bestrebungen*) has now, according to the information received, voted no less than £700,000 to create in Liverpool a counterpoise to the Leipzig Fair. France has applied herself to creating in Paris a fair for tobacco goods, for toys, and for furs. Under the leadership of the very active Mayor of Lyons, Monsieur Henriot, the attempt has also been made to call into existence a great fair as a counterpoise to Leipzig."

Deputy Schiele, of the Conservative party, said:—

"The Leipzig Fair is a concern for the whole nation. We shall not recover after the war even economically the *status quo ante*. Therefore everything must be done to reconquer the foreign market in behoof of our working-class. The late Ludwig Frank said that if we do not win the war, both in the military and the economic field, we must export men instead of merchandise. This Leipzig proposal is merely the introduction for other endeavors in furtherance of German export trade."

Dr. Bell, of Essen, said:—

"Even during the war everything must be done in the interests of our export trade. If after the conclusion of peace our enemies want to continue the trade war, we must stand up industrially armed. The watchword must be, 'Hereafter, as before, let the Leipzig Fair lead the world!'"

Allied Exhibitions.

At the risk of wearying you, it seemed well to point again to the wisdom of holding international fairs in the countries of the Allies, in other words, exhibitions which shall be professedly glorified shops, where only goods may be shown for sale purposes directly or indirectly. On that basis the whole public will be interested, and every fair should be a financial success towards further and finer displays. And the exhibits should be limited to the Allies, so as effectually to assist in recuperating our injured fortunes. Even if the American eagle should scream, for once never mind him, but do all that is fair and lawful to help ourselves and help our friends. If we do not follow out such a policy, the glorious Alliance will fall apart—as the Germans confidently prophesy—and new associations of the Powers will be formed, to this Empire's imminent peril. This is not the last of wars; men will still be men; evil will persist in the world; avarice and luxury will again bring chastisement upon nations; peace, wealth and ease will form no guaranty for love, honor and purity.

Our worst foes will be those of our household who will talk disarmament and dazzle our eyes with the films of Utopia.

Professor Muth, of Munich, whose name in German signifies "courage," published, in an intellectual serial, *Die Süddeutschen Monatshefte*, the text of a remarkable paper by Vincento Ludoslavski, a Polish writer, in which he declared that the British Empire has hitherto carried out and is still fulfilling a glorious mission in the earth. "Because," he said, "it was not built up by man, but is the handiwork of God—it can never be destroyed by man." There, then, is our trust as set forth, not by our own lips, but by another's, and as fiduciaries and without predilections it is for us to maintain the august heritage. It is not ours for ease and sport and pleasure alone, but to be carried on with regard to our awful responsibility. Then, indeed, will it be secure and, not without imperfections, remain the most beneficent creation of human genius.

"Economic Life After the War."

("Das Wirtschaftsleben nach dem Kriege")

I translate from the *Frankfurter Zeitung* of last month part of a private telegram which gives extracts from a speech of the Director of the German Grain-purchasing Department, Under-Secretary of State Michaelis. It was given in the Berlin University and was upon the "Providing of Bread-grain for the German People." After speaking hopefully of the present outlook for supplies, counting upon Rumania, he dealt with future prospects.

He distinguished the period of transition after conclusion of peace from the further future. This, let me remind you, is from a proved and able business man. In close translation the article runs:—

"For the transition period, which Michaelis reckoned to last for several years, he declared it to be indispensable that the Imperial Grain Office, as also the commandeering and rationing, must remain. It would be a wrong idea that with the declaration of peace the food-troubles would be at an end, and that across the wide-opened frontiers all would pour in that we are now lacking. The adjoining countries, as well the enemy as the neutral, find things as bad as we do, and they also will be just as slow to recover. Even America now threatens export prohibitions. Our agriculture has become poorer through want of nitrogen. We must therefore reckon, says Michaelis, that we must manage for years to come with our own production. Relief will begin firstly with the reduced demands for the army and from the conquered domains, which will be at our disposition for the provisioning of Germany with grain. But such improvement will only enter gradually, and it is wrong to clamor 'Give us peace, give us bread!' By the conclusion of peace the food-troubles will not be immediately lessened.

"Whether in the further future"—the Minister continues—"by utilizing our experiences in the years of war and of transition, the control of home-grown grain or of that imported from abroad shall be taken over and dealt with by the State, is still an open question. But people must accustom themselves to the thought that after concluded peace the expenses of the German Empire will be quadrupled, if not indeed multiplied five-fold. Under the enormous pressure which the deterioration of our public economy, and at the same time of our individual husbandry has evoked, we shall be necessitated, for the restoration of ordered industrial life, to accustom ourselves to ideas which without this need and stress we should wholly reject. In this sense the war will prove, especially after its close, to be a stern schoolmaster."

Equally striking revelation of the radically hopeless position of the Germanic Empire is made in the Reichstag debates upon the food supplies, but to a commercial man like myself the most illuminating glimpses are obtained in the

market and company reports. The subject is far too wide to enter upon, though intimately related to industry after the war. The deduction for us is to support in all conceivable ways our nation and Government in their efforts to raise promptly to a maximum the concentration of energy. Above all things, to assist and insist upon tightening of the blockade. To weaken the enemy is nothing else or less than to win battles. To that end, therefore, squash our own *soi-disant* pacifists by any and every means, for out of their malevolent activities, were they successful, would assuredly come a renewal of the bloody conflict in still more awful form. As before said, we shall either end or extend the trouble.

Enemy Clothing.

Instantly, when war broke out, Australasia forbade export of wool and meat. Worse than lack of food is lack of clothing, for the former is remediable, but the latter is, in the military aspect, hopeless deprivation. All possible alertness could not save the enemy. He thought to find other fibres, and made experiments with nettles. I find from his own papers that the whole stock derivable, after concentrated scientific effort, and employing, according to the *Frankfurter Zeitung* of December 5th, 12,000 people in all parts of the Empire, amounts to 1.650 tons of dried nettle-stalks up to that date. Say with a yield of one-fourth actual fibre, the result is about 400 tons. Obviously an amateurish and unpractical scheme. The fibre is useful in peace time, but for uniforms inapplicable, because it will not stand strain and exposure. Repeatedly I find allusion to the spinning of artificial silk—a celluloid preparation—and of paper, no doubt a form of Kraftpapier; both useful enough ordinarily, but again inapplicable for military purposes.

To placate America in the traditional way, indirect deliveries of cotton to our enemy were permitted by us upon a vast scale after the start of hostilities. The effect was to raise his strength and hope, as also to raise immensely the cost of cotton to the Allies. After the war the Allies, in continued alliance, will be big enough and strong enough to take independent action commercially in their own behoof, and to consider their common interests in preference to those of dollar-chasing neutrals.

Foreign Domination.

America controls five-sixths of the entire tobacco selling trade of the British Empire. A single man, resident in Long Island, New York, possesses nineteen-twentieths of the sewing-machine manufacturing and selling of this Empire, owning not less than 60,000 branch establishments throughout the world. That is the apotheosis of capitalism and *laissez-faire*; but it is not in or for our interests. Is it even necessary to say so? Yes, and to say it a thousand times until attention be paid to it. For there is now in practice and further preparation by Chicago monopolists a comprehensive scheme to obtain monopoly of meat production and sale within the Empire *per fas et nefas*. Your neck is in the noose now, and your hopes are far more with the action of the Dominion parliaments than with the unwieldy British legislature hampered and hide-bound with scholastic tradition.

A Parliament of 670 members means an attempt to govern by public meeting. Dealing with the tangled controversy of Ireland has been its chief occupation, as well as the basis for the choice of its members, so long as I can recollect. Yet Ireland has fewer inhabitants than Australia or Canada, and not a tithe of the importance of either.

Arguments favoring the creation of a Parliament of the Empire have been often and amply refuted. The rejection of the necessary referenda by any of the States would be too disconcerting an outcome to justify the risk. History indicates other, sounder, and safer expedients.

It is a sure thing that our Allies will gladly help in keeping the respective domains of the several States—those of the ten Allies—from foreign domination and undesired exploitation. Or, on the other hand—limiting ourselves to the British Empire—if the Imperial Parliament would sweep away the foreign octopus of monopoly, whilst Canadians and Australasians were handed over *Sinn Fein* to deal with in its next outbreak, there would be “something doing.” That is but a beautiful dream.

Cable and Aerial Messages.

Recalling the German tribute to our superb system of world-cables, why should we not offer freely to our fighting friends a preference in its use? What about grappling them to our soul with hooks of steel, or are we to drop them where they are, merely to placate the neutrals that did nothing for us anyway, unless it be a favor to sell us commonplace stuff at outrageous prices? It would greatly help our interstate commerce and Imperial progress if there were duplication and expansion of the services, so as to carry messages at low and unremunerative rates. Profit and increased interchange would follow.

Monopolies of Invention.

That channel through which aggregated foreign capital can and does exert an overwhelming force, in exploitation of mankind's energies, is popularly called “patents.” The familiar word has been so distorted from its proper use as to be almost exclusively applied to authorized monopolies. The Associated Chambers of Manufacture of Australia specifically and spontaneously appointed me as their spokesman in London, and upon their behalf I am entitled to say that this subject of monopolies has not only caused them great concern, but has been the cause of repeated representations to the Commonwealth Government. The industries of the Empire suffer severely all the time from restrictions and imposts by foreign monopolists. Purchased often from British and Colonial inventors at low prices or insignificant royalties, the people of this Empire are bled secretly but surely to an incredible extent, and disadvantaged in many ways, by these monopolies.

Chiefly by litigation at enormous cost, thus terrifying recalcitrants, American holders of monopolies in shoe-making machinery particularly, renewing and extending their control by extremely clever manipulation, extract really royal revenues from the British Empire. This is unknown to all but those users who primarily pay the exactions.

The whole incandescent light industry was held in duress by an Austrian monopolist, who, by daringly vague but therefore comprehensive patents of monopoly, derived power for further exploitation. To fight his claims to monopoly of the use of a range of natural agents was proved to be ruinous. He lavished money upon the costliest legal advice and litigation, winning all along the line. The British public does not want monopolies, but its lawyers do. When the subject of these patents of monopoly comes up, in the course of years, before the Council of Dominions of the Empire, there will be a hope of remedy. Probably not till then.

The German Octopus.

After Armageddon you will have to deal with an industry in which the European nations have hitherto been most diligent, and for whose termination the soul of mankind prays with an inexpressible longing. That is the practice of setting up German kings, kinglets and princes to rule over the lives, liberties, and hopes of harmless nations. In that business we British have assumed a ghastly pre-eminence, and truly the Hohenzollerns owed us an everlasting gratitude. Let anyone take the “*Almanach de Gotha*,” issued by Julius Perthes of Gotha; the German publication selected by our

authorities and censors for untrammelled circulation in our midst. Let him take that mine of information and dissect it upon a pack of ledger-cards, firstly setting aside all prepossessions. Let him study and compare as I have done, and he will learn what the alleged “*Dei gratia*”—the “Grace of God”—has done for him and for hapless mankind. Let him plot out on the map of Europe the details of German interpenetration, and ask himself—himself alone—if he would assist in spreading the industry to France?

In 1870, the ostensible cause of the Franco-German War was the resolve of Prussia to place a prince of Hohenzollern to rule over Spain as first War-Lord. The announced desire of our own rulers was “to see a strong Prussia,” and they realized it, although poor, broken, humiliated France saved us from the Spanish danger. Does anyone believe that a real democracy—as the United States, Britain, or France—could design and carry out preparations for world hegemony? Would anyone of those peoples submit to an order from above, “You mind your shops and factories, and leave the war business to us?” We are paying in blood and tears for our distrust of humanity in permitting—and even forcing—other nations to submit to the imposition of German princes, and thus virtually instituting in potency a restoration of the Holy Roman Empire that was neither holy nor Roman. The mild rule of the real Cæsars, however unworthy some of the successors of the great Augustus, was founded on the principle of allowing democracies to govern themselves, and it brought a peace to the world over greater area and longer duration than it ever knew before or has ever known since.

Knowledge Wanted.

The same Julius Perthes of Gotha is publishing by authority a series of books setting forth the ways and means whereby Germany is to regain her position of trade control and manufacturing dominance when peace shall come. To this, as so often herein insisted, the *conditio sine qua non* must be German control of materials, especially within the British Empire. I have anxiously tried to get those books, but am told that the Censor has issued orders that no such books may be procured from Germany. Not too many of us who are versed in manufacture and production—as well as representatives of producers' organizations—are also conversant with the German language, German mercantile practice, and exchange. The British Board of Trade—I am able to say authoritatively upon behalf of Australian manufacturers at the least—does not begin to fill the gap. We greatly prefer unfiltered knowledge gathered by ourselves, for what the Board of Trade offers us we seldom want, and what we want we seldom or never get. Consequently, we rely upon ourselves and our organizations to acquire the needful guidance. Hitherto we have found self-reliance count for a good deal, whilst there is an increasing generosity in the interchange, amongst producers, of specialized knowledge.

We shall have to compete with the German, and badly want to know what cards he holds, inasmuch as he assuredly—through his Censor—blocks nothing at all that can guide him.

A Request from Australia.

In 1914 a request was sent to the British Board of Trade from the Associated Chambers of Manufacture of Australia, desiring that effort should be encouraged to form an Association in Britain specifically to represent the whole body of British home manufacturers. It was hoped that it might take the same place in the United Kingdom as the National Manufacturers' Association of Canada, in the latter country, or as a similar body in the United States. An answer was returned that the Board did not consider such a movement would serve any useful purpose.

It was, of course, a severe rebuff, and as certainly undeserved, for the sole aim was conservation of British energy by mutual help in the furtherance of industry. It has always been felt by industrials in Australia that their activities were looked upon askance by one of the great political parties of England. The manufacturers of Australia employ 350,000 people, and produce in the year goods to the value of £166,000,000. Even the added value to the materials exceeds the total value of any other department of production. And to tell these citizens, possessed of boundless goodwill, that their proposal of friendly association with their colleagues in Britain would serve no good purpose demands an adjective which I leave to others to supply. The mistake, however, was in applying to the Board of Trade at all. National movements are best promoted outside of officialdom, and no good progress in the desired direction has already been made.

I have not adduced in detail illustrations of Allied interchange and preference in the basic domain of metals, for the reason that I have undertaken to do so at some length next week in another place. It suffices that we possess a power of control to an extent that should fulfil all desires.

To sum up. The British Empire possesses sources supplying manufacturing materials of which some are of basic importance and at the same time unique. Our foremost duty is so to continue to ally ourselves with our Allies in this life-struggle as to help them faithfully and materially in the long and arduous process of recovery and restoration. We can best do so by preferring them in the supply of materials of all kinds. It is an unproved assumption that our enemies will pay us better prices than our friends. Again, we shall secure for the latter, as for ourselves, outlets for manufactures. And all that, even if in so doing we refuse again to permit Germany to monopolize or share in control of Australian lead, zinc and copper, or to absorb so much as she formerly did of the small remaining deposits of English china-clay; or to purchase again English coal-mines.

Means of Control.

The whole commerce of a country is compelled to pass through one valve—the Customs. Whether exports or imports, free or dutiable, everything is thus subjected to registration and control.

By operating this valve—which is by no means solely for ensuring collection of duties—foreign frauds and deceptions upon the citizens are prevented, objectionable goods are excluded, and preference is given to the Mother and sister countries. So, too, in many British States, export duties are received, control exercised over the issue of their own products, and all requisite statistics obtained. It becomes merely a question for solution by the wisdom of each Parliament how far to extend the principle of present action. We have already the way, we need only the will.

To conclude. The only security for existence, with freedom of the smaller nations, is that the Grand Alliance shall continue. You cannot trust merely to a "scrap of paper." To prevent outrages that are remediable only by a deluge of blood, there must be an irresistible confraternity of nations. America is a chaos of unassimilated peoples whose future no one can forecast. It is neither a race nor a nation, blink the fact as we may. Europe's liberties are in her own keeping. The security for them is by genuine brotherly preference in every thinkable way, beginning with national business alliances based upon this voluntary preference as distinguished from bargains of any kind. Trust the people, trust the peoples, all the time. You have to depend upon their sense of honor in the last resort. Put not your faith in German princes, but insist upon their eradication as the *fons et origo*

malis. From the limits of the habitable globe it is the man of the people, of ten nations and of countless races, who rushed to the bloody crusade for Christ and Right:—

"You took the Cross, although you didn't show it,
'Twas graven on a heart and not a shield;
'Twas for the Cross, although you didn't know it,
You mocked the horrors of the blood-stained field.

"You were but one, there was a host of others
Who felt full manhood when the trumpets blew;
Unconsciously you felt they were your brothers,
Nor knew that God was calling them and you.

"I mean you didn't hear the voices calling,
You simply followed where the Spirit led,
And when you saw them all around you falling,
You didn't know it was for Christ they bled.

"Duty impelled you and you never faltered—
There was no need for her to whisper twice;
The end you saw not—no, nor would have altered:
You took the Cross and made the sacrifice!"

A BIG PURCHASE.

Du Pont Company Buys Out a Large Paint Manufacturing Industry in Philadelphia.

The Du Pont Company of Wilmington, Delaware, have acquired the paint manufacturing business of the Harrison Bros. and Company, Inc., of Philadelphia, for \$5,100,000 in cash. The business will be conducted by a new Pennsylvania corporation to be known as Harrisons, Inc. The present Harrison plant on Gray's Ferry Road covers 40 acres, on which there are 80 buildings. Notable among these is a model lead plant with annual capacity of 10,000 tons. The demand for chemicals since the war has caused the company to organize the Mantua Chemical Company whose works are at Paulsboro, New Jersey, on a tract of 250 acres, through which flows Mantua Creek, giving access to the Delaware River. The company also owns a plant at Sixth and Jackson streets, Camden, New Jersey, and a pyrites mine in Virginia. The business will be continued by the new owners and the products hitherto turned out by the Harrisons will continue to be made by virtually the same organization.

WILL MANUFACTURE ABRASIVES.

Company Formed to Manufacture Artificial Corundum at a Plant in Hamilton.

D. A. Brebner, Limited, who have been dealing in abrasives for the past three years, have commenced the manufacture of artificial corundum in Canada. Mr. D. A. Brebner, of the Manufacturers' Corundum Company, is President of this company, which is already equipped for immediate operation. In view of the large amount of abrasive materials which have been imported into Canada in the past, it is a satisfactory expansion of our manufacturing processes to have this new industry established.

The plant is located in Hamilton, with the head office at 58 King Street West, Toronto. The company will manufacture specially "Coralox."

For some time the supply of available abrasives has been insufficient for the needs of the country. Manufacturers of abrasive wheels have been compelled to trust to outside sources of supply. It is the aim of the new company to provide an ample supply for all Canadian requirements, in addition to the export trade which is offering.



INSURANCE



INCREASED VALUES AND CO-INSURANCE.

The Importance of Carrying Sufficient Insurance to Safeguard Loss through Greater Insurable Value of Property.

The tremendous increase in cost of materials of all kinds during the past few years, has raised a very serious question which should be most carefully considered by all holders of fire insurance policies, particularly those whose policies contain a co-insurance clause. The question refers more especially to the increased value of buildings and machinery, since stocks of all kinds have a daily market value, and the majority of manufacturers keep close watch on their stock values and adjust their insurance accordingly. In the case of buildings and machinery, however, it is probable that very few firms have revised their insurance values since the beginning of the war.

Theoretically, the insurable value of any property is the sum which would be required to replace such property in the same condition as immediately preceding the fire by which it was damaged or destroyed. Thus it is left until after a fire has occurred for the replacement value to be definitely proven, since insurance companies refuse to issue policies which contain any agreement of value. In the case of a building being destroyed by fire, the theoretical replacement value would be the cost of re-erection, as at the time of the fire, less, of course, depreciation determined by its age and other factors. The insurable value of machinery is calculated on a similar basis, except that the extent of depreciation varies more considerably. In many cases, by constant repairs and replacement of parts, a machine may have been maintained in a condition almost as good as when it was purchased.

It will be evident that, if the theory of present day replacement cost is to be accepted, the current value of a great proportion of buildings and machines is to-day much greater than the original cost price. In many instances—more particularly in relation to machinery—but also to a great extent as regards buildings, cost of replacement has advanced more than thirty per cent. within the past three years. If insurance policies contain no co-insurance clause, the question is merely one of whether the assured will be satisfied, in the event of a fire, to collect from the insurance companies the sum insured, irrespective of how inadequate it may be to replace the property destroyed. If, however, the policies are subject to co-insurance, the question becomes one of whether the assured will not be compelled, owing to under-insurance, to bear a proportion of any partial loss. A brief example will help to make the matter more easily understood.

Three years ago a manufacturer purchased machinery to the value of \$20,000 and has maintained it in perfect condition. The machinery is insured for the sum of \$16,000, the policies being subject to the 80% co-insurance clause. A fire occurs and damages the machines to such an extent that it requires \$5,000 to effect the repairs. If the adjuster established that the actual value of the machinery at the time of the fire was \$25,000 instead of the original cost price, \$20,000, he would be entitled, by the terms of the co-insurance clause, to require that insurance had been carried to the amount of \$20,000, and the assured could be held as a co-insurer to the amount of the deficit, \$4,000, and be made to bear that proportion of the loss, so that he would only recover \$4,000 from the companies.

Some doubt may arise as to how far an adjuster would be justified in taking present day prices—which are undoubtedly abnormal—in calculating the operation of the co-insurance clause. It is impossible to obtain a definite ruling on the

subject and many property-owners will doubtless feel inclined to safeguard themselves by increasing their insurance to take care of the abnormal rise in values. The probability is that, in the event of fire, an assured would demand indemnity on the scale of current replacement cost, in which case it is only reasonable to assume that the insurance companies might also take advantage of the rise in values where it operated in their favor. At all events, the question is one of sufficient importance to demand careful consideration by all who aim at arranging their fire insurance on a basis of absolute security.

CANADA'S FIRE WASTE.

February Losses Reach Over Two Millions and with January Make Large Total.

According to estimates compiled by the *Monetary Times*, the fire loss throughout Canada during the month of February amounted to \$2,009,953 as compared with \$1,918,660 during January last, and \$3,275,600 during February last year. A total of nearly four million dollars for the first two months of the year is a distinctly bad beginning. The heavy loss during February, 1916, was principally owing to the destruction of the Parliament buildings at Ottawa.

LEGISLATION REPEALED.

South Carolina Withdraws Obnoxious Laws and Fire Insurance Companies Return to the State.

The companies which resisted the oppressive South Carolina insurance laws and withdrew from that State for many months, are now invited to return by the repeal of the obnoxious legislation which practically drove them out. A number of New York companies have already returned and doubtless others will follow. It was a foregone conclusion that this would be the inevitable result of the legislation which placed absolute control of fire insurance rates in the hands of the State government. Government rate making has been proved quite impracticable and, rather than submit to such arbitrary control, the majority of the companies ceased to transact business in the State. The insurance companies were necessary to the welfare of the people and their withdrawal compelled the repeal of the laws complained of.

A NEW PERIL.

The Fire Hazard of Electrical Appliances Has Become a Serious Factor in Recent Years.

A fire peril which has been developing rapidly in recent years is that connected with the use of various convenient electric devices, such as pressing irons, curling irons, toasters, electric pads or blankets, electric plate warmers and electric sterilizers. Many fires have resulted from the use of these appliances, but in most cases they have been observed and extinguished before reaching large proportions. Some of them, however, have caused very extensive damage, one fire which led to the destruction of property valued at \$350,000 having been traced to an electric plate warmer. The National Board of Fire Underwriters has data concerning many such

fires on record, indicating that they number at least 30,000 annually. As practically all such fires are due to carelessness in the use of the various devices indicated, it is manifest that if persons using them would simply shut off the current whenever leaving the appliance, even for a short time, most of the fires could be prevented.

CARE OF SPRINKLERED RISKS.

Importance of Frequent Inspections and Watchfulness to Ensure Proper Working of Apparatus.

Underwriters' organizations in New York, following three sprinklered losses within a month aggregating \$5,000,000, have sent out urgent appeals to sprinkler owners for care in operation. In each of the three losses, the sprinklers were out of commission at the time the fire occurred, on account of repairs. Attention is also called to the danger caused through freezing. In some cases fires have occurred before the fact was known to the property-owner that the equipment was out of service; in other cases fires have occurred while the equipment was shut off for repairs necessitated by freezing, and in still other cases equipments may have frozen up and the property-owners not be aware even to-day that their equipments have been and maybe are still in a non-operative condition. Careful and complete examination of the system and special precautions during cold weather are accordingly urged.

The owners of every risk equipped with automatic sprinklers should institute a system of weekly inspections which will ensure the prompt discovery of any defect in the

equipment. A member of the staff, thoroughly conversant with the care of a sprinkler system, should be made responsible for these weekly inspections and should be provided with blank forms on which to make his reports. Too many people are inclined to think that, once they have installed sprinklers, they need give the subject of fire protection no further thought. A sprinklered plant with the equipment out of order is more likely to burn than if it were not sprinklered for the simple reason that entire reliance is placed on the sprinkler system and ordinary care is correspondingly relaxed.

Underwriters are really becoming doubtful as to the adequacy of present rates on sprinklered premises. The volume of premium is so small in comparison with the large amounts at risk, that a very few fires can more than wipe out all the premiums collected on the class during a period of twelve months. Numerous suggestions have been made for making the assured partly responsible for any breakdown in the sprinkler installation. One is that in case of the failure of a sprinkler equipment, due to carelessness or neglect of proper precautions, a plant should forfeit its characterization as sprinklered and revert to the classification of an unsprinklered establishment. Then, in the event, of its being visited by a fire, the loss should be calculated proportionately according to the amount of insurance which would have been purchasable for the premium paid, at the rate which would have been charged had no allowance been made for sprinklers. It is improbable that any such suggestion will be put into effect, but it is undeniably necessary for both insurance companies and assured to take all possible care to ensure equipments being kept in good operating condition.



By J. R. K. BRISTOL

WAR MEASURES REGULATIONS.

Certificates of Origin and Interest.

Under date March 27th, 1917, the Commissioner of Customs has instructed Collectors of Customs, relative to the above, as follows:—

Your attention is directed to the instructions contained in Memorandum No. 2033-B, that goods shipped to Canada from Norway, Sweden, Denmark, Holland and Switzerland, on or after the 10th October, 1916, were not to be admitted to entry at Customs unless there be produced at the time of entry a Certificate of Origin and Interest covering the goods, and issued by a British Consular Officer in the country whence the goods were exported.

The regulation in question was adopted with a view to preventing goods of enemy origin being imported into Canada from neutral countries in Europe, but the Certificates of Origin and Interest are not to be regarded as absolute proof that the goods in respect of which they are issued are not of enemy origin. The following statement is stamped on each Certificate:—

"The present Certificate is not to be regarded as an absolute guarantee of the origin of the goods, which remain liable to seizure if they should prove on examination by the competent British authorities to be of enemy origin."

Shipments Via United Kingdom.

In many cases goods shipped from the above-mentioned countries to Canada are transhipped at ports in the United Kingdom. The Department has been advised by His Majesty's Government that the practice in respect of the Certificates of Origin and Interest for such goods destined for Canada, which are transhipped in United Kingdom ports, is as follows:—

(a) Where goods arrive at a port in the United Kingdom in transit on direct bills of lading, or for transshipment on through bills of lading to Canada, they are allowed to proceed without enquiry and the Certificates of Origin and Interest are not retained in the United Kingdom.

(b) Where goods arrive at a port in the United Kingdom on a bill of lading to the United Kingdom and are entered for immediate exportation to Canada under transshipment regulations, these goods also are allowed to proceed without enquiry and the Certificates of Origin and Interest are not retained in the United Kingdom.

Parcel Post Shipments in Transit Through the United Kingdom.

Goods arriving in Canada from any of the above-mentioned countries by parcel post, and which have passed through the United Kingdom in transit, should be accompanied by Consular Certificates of Origin and Interest.

The practice of the British General Post Office is to forward the Consular Certificates attached to the corresponding despatch note and to insert a note in the Parcel Bill—on which the parcels are advised, to the effect that certain parcels are accompanied by such Certificates.

If parcels are addressed to firms in the United Kingdom the Consular Certificates of Origin and Interest are retained in the United Kingdom, as in the case of other importations, except in cases in which the addressees attend the Mount Pleasant Parcels Office and re-direct the parcels abroad. In these cases a green label bearing the words "Re-directed in transit" is attached to the parcels. Certificates of Origin and Interest are required in respect of such re-directed parcels.

Certifying Re-Exports from the United Kingdom.

The only instances where goods from the countries above-mentioned, imported into Canada via the United Kingdom, should be admitted to entry at your port without a Consular Certificate of Origin and Interest, are where the shipments consist of goods which were originally imported into the United Kingdom in the regular way and subsequently re-exported to Canada.

Firms in the United Kingdom making shipments to Canada of goods previously imported in the regular way from Norway, Sweden, Denmark, Holland, or Switzerland, can obtain from the proper officers of Customs in the United

Kingdom, at the time of shipment of such goods, stamped and signed duplicate copies of the "Specifications for Foreign and Colonial Merchandise" (Form 30, or "Shipping Bill," Form 64), as the case may be. The production of one or other of these forms by a Canadian importer will be evidence that the goods have passed scrutiny in the United Kingdom.

Goods Re-Exported from the United Kingdom by Parcel Post.

The above remarks regarding certifying re-exports from the United Kingdom do not apply to goods arriving from the United Kingdom by Parcel Post, even though the parcels contain goods which originally reached the United Kingdom from Norway, Sweden, Denmark, Holland or Switzerland.

A parcel posted in the United Kingdom is *ipso facto* a re-export and entry may be accepted and delivery permitted of all parcels arriving in Canada which have been posted in the United Kingdom.

ORDER-IN-COUNCIL.

Cyanide of Sodium.

By Order-in-Council, dated the 27th day of February, 1917, cyanide of sodium, and compounds and mixtures containing cyanide of sodium are prohibited to be exported to all destinations abroad other than the United Kingdom, British possessions and protectorates.

FOREIGN TRADE OF CANADA.

IMPORTATIONS.

(Comparison 1915, 1916, 1917.)

	Month of February.			Eleven Months Ending February.		
	1915.	1916.	1917.	1915.	1916.	1917.
Dutiable goods	\$21,956,997	\$29,097,441	\$36,490,288	\$255,965,743	\$254,551,876	\$407,136,756
Free goods	13,955,913	22,557,527	31,540,181	158,994,244	191,196,880	335,858,261
Total	\$35,912,910	\$51,654,968	\$68,030,469	\$414,959,987	\$445,748,756	\$742,995,017
Coin and bullion	288,916	2,109,968	525,469	131,546,197	33,728,819	26,448,170
Grand total	\$36,201,826	\$53,764,936	\$68,555,938	\$546,506,184	\$479,477,575	\$769,443,187
Duty collected	\$6,919,560	\$10,489,586	\$11,409,494	\$70,625,636	\$91,757,447	\$130,550,845

EXPORTATIONS.

(For February.)

	—1915—		—1916—		—1917—	
	Domestic.	Foreign.	Domestic.	Foreign.	Domestic.	Foreign.
The Mine	\$3,274,626	\$31,975	\$4,896,026	\$2,518	\$5,074,172	\$924
The Fisheries	1,800,710	12,534	1,782,071	48,410	1,655,615	56,497
The Forest	2,342,590	3,120	2,595,420	1,385	2,459,024	660
Animals and their Produce	4,816,610	84,635	5,492,339	74,472	7,652,860	901,753
Agriculture	7,616,411	25,053	13,898,856	23,830	11,449,080	371,949
Manufactures	8,982,649	1,003,316	28,606,680	556,508	39,504,694	1,835,569
Miscellaneous	47,691	79,991	659,776	124,742	428,938	87,513
Total merchandise	\$28,881,277	\$1,240,624	\$57,931,168	\$831,865	\$68,224,383	\$3,254,865
Coin and bullion	99	2,529,989	.....	116,288	28	127,486
Grand total exports	\$28,881,376	\$3,770,613	\$57,931,168	\$948,153	\$68,224,411	\$3,382,351

EXPORTATIONS.

(Eleven Months Ending February.)

	—1915—		—1916—		—1917—	
	Domestic.	Foreign.	Domestic.	Foreign.	Domestic.	Foreign.
The Mine	\$45,743,979	\$319,912	\$58,585,018	\$7,274,699	\$75,636,196	\$207,664
The Fisheries	17,621,504	122,995	20,323,484	190,052	22,515,995	334,849
The Forest	39,209,742	480,754	48,023,709	425,418	52,292,824	486,874
Animals and their Produce	68,914,494	2,542,835	94,255,595	2,627,889	112,985,527	5,932,373
Agriculture	122,307,905	34,910,898	231,808,768	17,174,811	351,451,449	6,439,980
Manufactures	69,938,711	7,690,158	195,021,232	7,422,076	408,160,190	8,767,488
Miscellaneous	563,579	3,185,705	5,178,594	1,408,577	5,918,274	1,556,406
Total merchandise	\$364,299,914	\$49,253,257	\$653,196,400	\$36,523,522	\$1,028,960,455	\$23,725,634
Coin and bullion	667	7,572,220	315	103,379,843	85,980	196,232,141
Grand total, exports	\$364,300,581	\$56,825,477	\$653,196,715	\$139,903,365	\$1,029,046,435	\$219,957,775



TRANSPORTATION



By J. E. WALSH

Proposed Canadian Freight Classification No. 17

The announcement of the Board of Railway Commissioners, that sittings will be held in Hamilton on the 12th, Toronto on the 13th, Ottawa on the 17th and Montreal on the 18th, to hear the application of the Canadian Freight Association for approval of Proposed Classification No. 17, comes as a surprise to the business interests of the country.

The new Classification, which has been on foot for some time, was submitted to the Commission in July last for approval. The railways, however, failed to comply with the Railway Act and the Board's instructions in regard thereto, requiring notice of changes increasing transportation charges. On attention being directed thereto the Chief Commissioner issued the following judgment:

Proof copies of the proposed New Canadian Freight Classification No. 17 have been received by the Board.

Not only do the changes in the Classification ratings appear to be radical, but substantial changes are also made in the Rules.

Owing to the fact that the new Classification contemplates a uniform Classification for the whole country, and that different Classifications have in the past obtained, the effect of the changes, both in the Classification and Rules, differ in the different districts, with the result that what would be a restriction of the mixing privileges in one means a mere extended right to mix carload lots in the other.

It is extremely difficult as the matter now stands for the Board; and it would seem to be impossible for the shippers to properly consider the effect of the new Rules and the new Classification without definite information as to all the changes sought, the injustice or difficulty suffered under the former regulations, and, speaking generally, the effect of the changes.

This information the railways either have or should have.

An Order should go directing the Railway Companies to file with the Board and serve on the parties a statement showing, in the first instance, all changes made in the Rules and the grounds on which the changes are sought to be justified, and showing the results the changes would make on traffic in Eastern and Western Canada respectively.

In November last the railways submitted a statement showing, in general terms, the changes in the rules. The justification offered was a desire for uniformity with the rules and regulations obtaining in the United States. When the failure to comply with the Board's directions, in regard to the effect the changes would have on traffic in Eastern and Western Canada; the grounds on which the changes were sought to be justified; and the injustice or difficulties suffered under the present regulations, were again brought to their attention, they replied that it was impossible to give this information with any degree of accuracy. The public was then advised by the Board that it would waive this portion of its instructions.

As evidently it has been determined to proceed in the application, the duty will be on the public to furnish the information, which the railways were directed to supply. There has been little opportunity, owing to the unusual transportation conditions, which have prevailed during the past six months, to study the proposed Classification, and the effect thereof. The fact, however, has been established that sweeping changes in transportation conditions are suggested, and that this is a most inopportune time to ask shippers and manufacturers to consider the proposition in the manner and form in which it has been submitted, especially with the acknowledged lack of information on the part of the railways who prepared the Classification. Resolutions to this effect

were adopted at meetings in the West and the East of the different commercial organizations held in Regina on March 14th, and in Toronto on March 27th. These protests were immediately filed with the Commission. Notwithstanding same it evidently has been determined to proceed in the application.

The Classification Committee of the Canadian Freight Association has evolved in two years' time a uniform Classification apparently without consultation with the commercial organizations throughout the country. They have accomplished in the time mentioned what has been on foot in the United States, in one form or another, since 1887, and in the hands of a special committee of experts since September 15th, 1908. In the latter case this Committee has not yet completed the descriptions, and nothing has been done in regard to the ratings. Our Board of Railway Commissioners, we believe, is of the opinion that the public should be consulted beforehand in regard to changes in freight classification. Commissioner Meyer of the Interstate Commerce Commission, in delivering his judgment in connection with United States Western Classification No. 51, said:

Classification is a public function. Public business cannot be conducted in a private way. Hearings of classification committees should be made public, and after due notice to interested parties, a record of facts and arguments should be made. As rapidly as items and groups of items have been disposed of by the Classification Committee, they should be published in accordance with the law.

No such procedure exists in Canada; in fact, as a rule, the conclusions of the Classification Committee are first submitted to the Board of Railway Commissioners.

As previously stated the only explanation offered by the railways in justification of the changes is a desire for uniformity with United States classifications. The investigation which has been made indicates that the desire for uniformity exists where the results would be beneficial to the carriers. In other words what might be termed the "good points" of the United States and present Canadian classifications, from the carriers' standpoint, have been retained. It was the view of the Commission, as outlined in the judgment, that the applicants should inform the Board in regard to this, and the Board was only giving effect to the Railway Act in directing them to do so. In view, therefore, of the failure of the applicants to comply with their instructions, and the general protests which have been filed by the commercial organizations, it would seem only reasonable that the Commission should refuse to consider the proposed classification in the form presented.

The present classification is the result of a compromise, which arose out of an agitation some years ago for a uniform classification. It then developed that the conditions in the East were entirely different to those in the West. The bulk of the traffic which moves under class rates originates in the East, and production is fairly well distributed. In the West distributing centres with large warehouses have developed, based upon the principles of the present classification. Any substantial departure therefrom would have a most serious effect on these interests. The Association has no desire to block any improvement that can be brought about, without unduly interfering with existing commercial conditions. At the same time it is strongly of the opinion that the classification proposed would have the effect claimed. Furthermore, it is the opinion that the Board should not proceed in this matter until its instructions have been complied with; in other words, their Orders should be complied with by all concerned.

A NEW FACTORY ADDITION

Six-year-old Plant of the Standard Underground Cable Co. of Canada being Enlarged by Erection of Large New Section.

In preparation for the prosperous times which the company anticipate will prevail after the close of the war, the Standard Underground Cable Co. of Canada, Limited, is making an addition to its factory at Hamilton, Ont., which, when completed and equipped with the necessary machinery, will represent an investment of \$50,000.

The illustration, published on this page, shows in the foreground this addition with a portion of the former factory in the point where the car is to be seen standing on the switch. The new structure consists of one storey with basement built the background to the right, the new part extending about to of brick and concrete and is 125 by 120 feet in dimensions, which gives a total increase in floor space of 30,000 square feet. It is most modern in type and equipped to secure the lighting, heating and ventilation necessary to the best working conditions. Ample fire protection apparatus is also provided for, which includes a complete automatic sprinkler system. The architects are Prack and Perrine, of Hamilton.

The new building will be devoted exclusively to the uses of the wire-drawing department, and in addition to housing the former equipment will contain material additions of new machinery of the latest design capable of drawing wires ranging in size from No. 40 B. & S. G., which is about the thickness of a hair, to the largest size of trolley wire; also machines for grooving trolley wire and for rolling flats and and squares such as are used in the manufacture of magnet wire. There will also be two new "Bright-annealing" furnaces for annealing or softening the wire after it has been drawn. This addition will not only give room for a considerable increase in the output of the wire-drawing department, but the space released will allow for expansions in the stranding and cabling departments.

All of the machinery in the new plant will be electrically operated by 3-phase alternating current motors of 550 volts, 25 cycles, the current being furnished by the Hamilton Hydro-Electric Department and carried from the overhead transmission lines of the department to the transformers on the company's property by underground cables. Power is now taken for other uses in the plant from the Dominion Power & Transmission Co.

This increase in the manufacturing capacity of a plant

erected just six years ago and still modern and highly efficient, considered in connection with the excellent rail and water shipping facilities afforded by its being located on two great railway trunk lines and on the shore of Lake Ontario, puts the Standard Company in an unexcelled position to meet promptly the electric wire and cable requirements of its customers, both domestic and foreign.

MR. YOUNGE ARRIVES IN SOUTH AFRICA.

A cable has been received announcing the arrival at Cape-town, S.A., of Mr. R. J. Younge, representing the Export Association of Canada. Mr. Younge will make special inquiries into the possibilities of South Africa as a market for Canadian exports, on behalf of many interested Canadian manufacturers.

NEW ADVISORY BOARD.

Bank of British North America Has Adopted a Broadening Policy in Dealing with Canadian Business.

The annual statement of the Bank of British North America and the proceedings of the eighty-first general meeting in London, which have just been received here, include the address of the Chairman of the bank, Mr. E. A. Hoare, in which reference is made to the appointment of a new Advisory Committee in Montreal. Notifying the shareholders of the precedent for the appointment of a Canadian committee, the President said that for many years, in accordance with a clause in the deed of settlement, it was the custom annually to appoint local directors in the principal cities of the Dominion, and this was continued until 1874, when, after long and careful inquiry and consideration, it was decided that it would be well to discontinue these appointments. "When our General Manager visited this country last year," said Mr. Hoare, "he made the suggestion that it would be expedient for us to revive these appointments in a form better adapted to modern conditions—not, as in the days of old, in all the principal cities, but in the three districts into which the work of the bank is now divided (the Eastern, the Central and the Pacific or Western branches), so that there should be an Advisory Committee in Montreal, Winnipeg and Vancouver.

"On his return to Montreal he took counsel with some valued friends of the bank, and the result was that he succeeded beyond our highest expectations. We felt that he had been singularly fortunate in securing the co-operation of gentlemen of such high position and recognized ability and experience, and we immediately responded authorizing the invitations, which were, to our very great pleasure, accepted, and in Sept. the Advisory Committee was duly constituted.

"The balance sheet, like most recent documents of its kind, shows a notable expansion of business combined with a condition of great liquid strength. The liquid assets are 55.9 per cent. of liabilities, and the chief item among them consists of British Treasury bills, which, as an explanatory note shows, have increased during the year ending November 30 from £210,000 to £925,000, and along with other classes of British Government securities have absorbed all the new funds put into liquid form and some additional sums taken from last year's excessive cash items."



New section recently added to the plant of the Standard Underground Cable Co. of Canada, Limited, Hamilton

Trade Enquiries

These enquiries come into our hands from various sources. The Weekly Bulletin of the Department of Trade and Commerce, from which the enquiries indicated in the sub-heading allotted to them are taken, should be read regularly by those interested in foreign trade. It will be sent free on application to the Department at Ottawa. The names connected with all those enquiries can be furnished direct from the Commercial Intelligence Department, Canadian Manufacturers Association, Toronto.

DOMESTIC TRADE INQUIRIES.

- 779. **Cheese Box Veneers.**—A Western Lumber Company would like to get in touch with firms in Eastern Canada making elm veneer suitable for cheese boxes.
- 780. **Paper Roll Plug Machines.**—An Ontario paper manufacturer is desirous of communicating with a manufacturer of a machine for making the wooden plugs used in large paper rolls.
- 781. **Black Crucible Wire.**—A manufacturer in the lower provinces would like to get supplies of Black Tempered Crucible Wire.
- 782. **Agency.**—An agent in Montreal, offering references, would like to get in touch with manufacturers of Shirts, Collars, Ladies' Whitewear and Knitted Goods, with a view of selling their lines throughout the Province of Quebec, where he claims to have connections with all the wholesale and retail stores.
- 783. **Agency.**—A Western manufacturer, whose travellers call on hardware stores and general stores throughout the West, would like to hear from Eastern manufacturers of lines that can be sold to such a trade with a view of representing them in the West.
- 784. **Agency.**—A storage and commission house in Edmonton are open to accept a good exclusive line for the territory in that neighborhood. They have storage room, and two travellers constantly going through the district, both on the railroad and off, and they also communicate by mail monthly with a large number of merchants.

IMPORTANT TRADE INQUIRIES.

- 785. **Olive Oil.**—An Algerian firm seeks a good Canadian Agent to represent a very high grade of Olive Oil.
- 786. **Millinery.**—A Paris firm requests to be put in touch with an experienced Canadian firm, especially for ladies' hat trimmings and mournings.
- 787. **Hides and Wax.**—From Abyssinia, a French firm seeks a good Canadian agent.
- 788. **Moka "Harrari" Coffee.**—A French firm of Addis Abbeba (Abyssinia), seeks a good agent in Ontario; this coffee being already very largely imported to Canada.

EXPORT TRADE INQUIRIES.

- 789. **Annealed Wire.**—An Algerian firm wants to be placed in touch with Canadian manufacturers of Baling Wire for hay and straw.
- 790. **Binder Twine.**—An Algerian firm wants to purchase such twine, for use on Canadian and American harvesting machines.
- 791. **Jams.**—A Paris firm is seeking for quotations and samples of Canadian-made jams.
- 792. **Grain and Flour.**—A French firm, of good standing, asks to be placed in touch with Canadian exporters of said commodities.
- 793. **Food Products.**—A French firm seeks the representation of Canadian manufacturers of food products of all descriptions.
- 794. **Nails and Tacks.**—A French firm wants to be put in touch with manufacturers of said articles.

- 795. **Agency, France.**—A very highly recommended French-Canadian, who has conducted an agency business in Paris very successfully for some years, is open to represent Canadian manufacturers who desire to do business with France.
- 796. **Agency, West Indies.**—A Toronto business man, who is contemplating a trip to the West Indies for the purpose of buying West Indian products, feels that he is in a position to profitably serve Canadian manufacturers who may desire a sales' or special representative for any purpose throughout the West Indies, and he would like to hear from manufacturers who are contemplating selling goods in the West Indies or desire any special services there.
- 797. **Agency, Dutch West Indies.**—A highly spoken of house of general merchants and importers in the Dutch West Indies would like to make arrangements with Canadian manufacturers of chairs, leather goods, food products, enamel ware, paints, and so forth. It is stated that this firm is a very large importer, and valuable business should result.
- 798. **Agency, Dutch Guiana.**—An English commission agent in Dutch Guiana desires to form connections with Canadian manufacturers who desire to dispose of some of their products in that country and in French Guiana.
- 799. **Agency, Norway.**—A well-recommended agent in Norway, who has successfully handled United States products on a commission basis, would like to form a connection with Canadian millers producing wheat flour, rye flour and rolled oats. They act only on a commission basis, and claim to have a splendid chance to do an extensive business in this line.
- 800. **Agency, Russia.**—A travelling representative and sales organizer, who has a plan for working up extensive connections in Russia, would like to hear from Canadian manufacturers who are interested in that market. He is planning a trip to Russia in July, and states that he will be glad to hear from any manufacturers who would like to secure a share of the Russian business on an economical basis and will supply to any enquirer full details of his scheme.
- 801. **Agency, Great Britain.**—A member of a Manufacturers' Agents Association, which he offers as a reference, would like to get in touch with Canadian manufacturers or Canadian producers of natural products, particularly in rare earths or metals.
- 802. **Electric Motors.**—A firm of importers in New Zealand are interested in importing first-class electric motors. The voltage is from 380 to 400, and the motors should be of a 50 cycle, 3-phase, alternating type. We have other particulars, and will be glad to supply them to *bona fide* Canadian manufacturers.
- 803. **Gas Burners and Mantles.**—A New Zealand gas company desires to obtain from Canada, if possible, gas burners, mantles, arc lamps, and other gas fittings.
- 804. **Glass Lamp Shades.**—The same enquirer as in the above item is interested in supplies of glassware for gas fittings of all kinds.
- 805. **Gas Stoves and Irons.**—The same enquirer as in the above item is interested in supplies of Gas Stoves and Irons.
- 806. **Malleable Iron Fittings.**—The same enquirer as in the above item is interested in Malleable Iron fittings.
- 807. **Wall Paper.**—General importers in Bolivia, representatives of a number of different American manufacturers (addresses upon application), are in the market for wall paper. Spanish correspondence preferable.
- 808. **Agricultural Implements.**—Manufacturers' agent in Morocco is desirous of representing manufacturers of agri-

cultural implements and supplies in general, and solicits correspondence in the French language.

809. **Leather for Harness and Saddlery.**—French manufacturer of harness and saddlery solicits samples with best offers, in the French language, on yellow leather suitable for such manufacture, especially for military purposes.
810. **Trunks, Bags, Materials.**—Customers in Spain of a New York house are anxious to secure the agencies of manufacturers of trunks and travelling bags, also of materials for trunk making. Correspondence preferably in the Spanish language.
811. **Dressing Combs.**—British import and export house, bearing a good reputation, requires samples and quotations on fine tooth and other hard rubber dressing combs.
812. **Safety Razors, Hosiery.**—Manufacturers' representative in Italy, considered honest and reliable, would like to hear, in the French language, from makers of safety razors, women's hosiery and men's socks.
813. **Cedar Wood Tubs.**—French metal and machinery house requires immediate offers, in the French language, on cedar wood tubs, probably for the manufacture of washing machines.
814. **Agricultural Machinery.**—Manufacturers' agent in Italy would like to represent, in that capacity, Canadian manufacturers of agricultural machinery of all descriptions.
815. **Oil Stoves.**—French house manufacturing lighting apparatus requires offers on oil and gasoline stoves, preferably in the French language.
816. **Toys and Dolls.**—Firm of general importers in Spain has special interest just now in purchasing toys of all sorts but especially dolls and toy animals. References are

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LIEUT. C. S. L. HERTZBERG, A.M. Can. Soc. C.E.

FOR IMMEDIATE DELIVERY

We offer for sale the following
Machine Tools and Accessories

ALL ABSOLUTELY NEW

- 1—Duplex two-spindle Linderman lathe complete, fitted to receive a face plate 10 in. diameter on front end of spindle and rear end of spindle to be threaded to receive pneumatic chuck 10 in. diameter, with 80 lbs. air pressure, 1 1-16 in. hole through back end of spindle.
- 30—No. 1 Racine Hack Saw Machines.
- 400—dozen 10 1/4 in. Hack Saw Blades.
- 1000—dozen 12 in. Hack Saw Blades.

Complete details furnished on request.

The Goldie & McCulloch Co.
LIMITED
GALT - ONTARIO

The Town of Kenora

ONTARIO



OWNS AND OPERATES
ITS OWN

Water Works System
Telephone System
Electric Light System
and
Hydro Electric Power

and is advantageously situated for Eastern and
Western Trade; on Canadian Pacific Railway west
of the Great Lakes.

10,000 Electric Horsepower

TO BE UTILIZED

Great Opportunities

FOR

PULP AND PAPER MILL—unlimited supply of raw material.
WOODWORKING FACTORY.

AERATED WATER FACTORY—Winnipeg Water District spending \$13,000,000 to obtain Kenora Water.

FLOUR MILL—district capacity now 14,000 barrels daily.

Correspondence with Industrial Concerns invited.

available to local banks, as well as to American manufacturers. The Spanish language should be used.

817. **Candles.**—Native firm of general merchants in British India solicits offers from candle manufacturers.
818. **Hats, Clothing, Hardware, School Furniture.**—Correspondent in Porto Rico wishes to hear in the Spanish language from manufacturers of hats, ready-made clothing, hardware, machinery, and supplies for schools.
819. **Mechanical Toys, Sewing Machines, Typewriters, Shoe Machinery.**—Old-established firm of machinery importers in Sicily solicits quotations in the English language on the lines specified.

Condensed Advertising

FOR SALE.

Colors—3 tons water soluble Nigrosine, price \$1.30 lb., f.o.b. Montreal; 600 lbs. black soluble in oil color, price \$1.00 lb., f.o.b. Montreal. Apply to Box 431, INDUSTRIAL CANADA, Toronto.

REPRESENTATIVE IN BRITISH COLUMBIA.

Resident representative for British Columbia. Young man with several years' experience as Manager for B.C. branch of an eastern corporation wishes to hear from some reliable firms who may want such services there. Advertiser is at present in Quebec Province contemplates returning to Vancouver in six months time, and would like some good commissions or would represent an eastern firm exclusively. Box 49, INDUSTRIAL CANADA, Toronto.

FOR SALE.

For sale, in first-class working order, second-hand General Electric Direct Current Generator, 35 k.w., 220 volts, arranged for belt drive, complete with sliding base, etc. Address Canada Forge Company, Limited, Welland, Ontario.

BUSINESS ASSOCIATE WANTED.

Man about 30, with engineering and commercial training, experienced in mine and smelter requirements, including structural and cast steel work. A man with office experience and capable of soliciting business preferable. Reply to Box 42, INDUSTRIAL CANADA, Toronto.

TRUCKS FOR SALE.

Trucks—A number of second-hand trucks, manufactured by the Weston Manufacturing Company, Limited, Ayr, and Wm. and J. G. Greey, Toronto. Approximate size 2 ft. 6 in. x 7 ft. Price \$7.50 each f.o.b., Toronto. In good shape. The A. B. Ormsby Company, Limited, Toronto.

SITUATION WANTED.

Young man, over 10 years experience in various chemical lines, covering Oils, Soaps, Chemicals, Extracts, Wood Distillation, Tar, Fermentology and Bacteriology and various products. At present employed, but desires change. Not afraid of hard work. References and experience on request. Address H. B. B., c-o of INDUSTRIAL CANADA, Toronto.

CONTINUATION SCHOOLS

(Continued from page 1405.)

the job is messenger service, operating automatic machinery in box or candy factory, then there is nothing in the work itself that trains for anything higher. A child may remain at such work for years and be no better off. Employers are under obligation to give these young workers opportunity to secure some form of training outside the job. Why is this the case? Simply because these children will leave these jobs in one or two years, with no training for anything in life. They land in the ranks of unskilled labor. They have a right to better treatment by industry and society, and continuation schools hold out a helping hand to thousands of young workers and lift them into the ranks of skilled workers.

The future development of Canadian industries will be aided greatly by the influence of continuation schools for workers between 14 and 17 years of age. These schools should be established in every city of any size in this Province. To secure this without further waste of time, the present Adolescent Attendance Act should be made compulsory. Nothing will ever be accomplished on the optional plan. There is a bill before the Massachusetts Legislature to make the present continuation school law compulsory on a state-wide basis. They experimented with the optional plan for four years and found it failed to produce results. Ontario will have to make the present law compulsory to reap the benefits of this legislation. The Adolescent Attendance Act offers opportunity for Ontario to advance toward true democracy in education.

CANADA'S STRUCTURAL TIMBERS

(Continued from page 1398.)

Red or Norway pine (*Pinus resinosa*) is one of the trees which is found practically only in Canada. It occurs in all provinces east of Manitoba, but more than 80 per cent. of the cut is in Ontario. In 1915, 122,387,000 feet, board measure, worth \$2,206,840 at an average value of \$18.03, were produced, in Canada. Of this Ontario produced \$1,873,955 worth. In 1915 it ranked sixth among the timbers cut in Canada.

The wood has a rather coarse grain, and is somewhat resinous, lying between white pine and pitch pine in this respect. In color the heartwood is light red and the sapwood yellow, or often almost white.

Red pine was formerly much used in construction work, but now it is replaced by pines from the Southern States and the woods from British Columbia. The species is still used to some extent, however, for structural purposes. The wood was largely used and is still used, both in Canada and England, for masts, spars, piling, and deck plank. It is used specially in car construction, including sills and frames. It is considered to be the best Eastern Canadian wood for paving blocks and for construction of water tanks.

The spruces collectively supply more lumber and have a higher total value than any other kind of wood in Canada. In 1915 spruce lumber to the value of almost \$24,000,000, was produced, mostly in Quebec, New Brunswick, and Nova Scotia. Of the different species white spruce (*Picea canadensis*) is found in all provinces, red spruce (*Picea rubra*) in Ontario to a small extent, but more commonly in Quebec and the Maritime Provinces, black spruce (*Picea mariana*) in all provinces, Engelmann spruce (*Picea engelmannii*) in British Columbia and Alberta, and Sitka or tideland spruce (*Picea sitchensis*) in British Columbia. The latter is the largest of all the spruces and formed about one-half of the spruce cut in British Columbia in 1915. The average value of spruce lumber in Canada in 1915 was \$15.24 per thousand feet, board measure.

THE BANK OF BRITISH NORTH AMERICA

ESTABLISHED IN 1836

PAID-UP CAPITAL, \$4,866,666.67

Incorporated by Royal Charter in 1840

RESERVED FUND, \$3,017,333.34

EIGHTY-FIRST ANNUAL REPORT AND BALANCE SHEET

Report of the Directors of The Bank of British North America, Presented to the Proprietors at Their Eighty-First Yearly General Meeting, on Tuesday, March 6th, 1917.

The Court of Directors submit the accompanying Balance Sheet to 30th November last.

It will be seen that the profits for the Year, including \$52,175.71 brought forward from 30th November, 1915, amount to \$598,522.11, of which \$146,000 was appropriated to a dividend paid last October, leaving a balance of \$452,522.11, out of which the Directors propose to declare a Dividend of 40s. per Share, payable, less Income Tax, on 6th April, and a Bonus of 5 per cent. to the Staff, estimated to cost about \$34,100.00, leaving, after the other special appropriations mentioned in the Balance Sheet, an amount of \$104,222.15 to be carried forward.

The above Dividend will make a distribution of 7 per cent. for the Year.

The Dividend Warrants will be remitted to the Proprietors on the 5th April.

During the year ended 30th November last, the Sub-Branch at Ituna, Saskatchewan, was closed.

The following appropriations from the Profit and Loss Account have been made for the benefit of the Staff, viz.:—

To the Officers' Widows and Orphans Fund	\$9,003.60
" " Pension Fund	37,998.55
" " Life Insurance Fund	18,493.33

In the exercise of the powers conferred upon them by Clause 60 of the Deed of Settlement, the Court of Directors, in September last, appointed an Advisory Committee in Montreal, consisting of Sir Herbert B. Ames, M.P., Mr. W. R. MacInnes and Mr. W. R. Miller, and they feel confident that this appointment will prove to be of great advantage to the Bank.

London, 26th February, 1917.

The Bank of British North America, BALANCE SHEET, 30th NOVEMBER, 1916.

LIABILITIES

Capital—20,000 Shares of £50 each, fully paid		\$4,866,666 67
Reserve Fund		3,017,333 34
Dividends Declared and Unpaid		4,851 42
Profit and Loss Account		
Balance brought forward from 30th November, 1915	\$198,175 71	
Dividend paid April, 1916	146,000 00	
	52,175 71	
Net Profit for the year ending this date after deducting all current charges and providing for bad and doubtful debts	546,346 40	
	598,522 11	
Dividend paid October, 1916	146,000 00	
	452,522 11	
Deduct:		
Transferred to Bank Premises Account	\$973 33	
Transferred to Officers' Widows and Orphans Fund	9,003 60	
Transferred to Officers' Life Insurance Fund	18,493 33	
Transferred to Officers' Pension Fund	37,998 55	
Canadian Patriotic Fund	6,999 69	
Canadian War Tax on Circulation	46,098 14	
	119,566 64	
Balance available for April Dividend		332,955 47
Notes of the Bank in Circulation		5,627,981 52
Deposits not Bearing Interest		20,511,339 45
Deposits Bearing Interest (including Interest accrued to date)		28,893,572 69
Balances due to other Banks in Canada		1,473 61
Balances due to Banks and Banking Correspondents in the United Kingdom and Foreign Countries		531,006 28
Bills Payable		1,641,484 67
Acceptances under Letters of Credit		883,428 48
Liabilities and Accounts not included in the Foregoing		1,473,864 35
Liability on Endorsements	\$238,555 69	
Liability under Guarantee in respect of the Sovereign Bank of Canada	\$300,000 00	

ASSETS

		\$67,785,957 95
Current Coin and Bullion	\$1,530,303 14	
Dominion Notes	4,457,971 86	
	\$5,988,275 00	
Notes of other Banks	491,682 88	
Cheques on other Banks	2,490,628 36	
Balances due by other Banks in Canada	9,002 18	
Balances due by Banks and Banking Correspondents elsewhere than in Canada	3,292,661 31	
Dominion and Provincial Government Securities, not exceeding Market Value	955,064 25	
Canadian Municipal Securities and British, Foreign and Colonial Public Securities other than Canadian	11,274,293 37	
Railway and other Bonds and Stocks	69,027 04	
Call and Short Loans in Canada on Bonds, Debentures and Stocks	1,446,233 86	
Call and Short Loans elsewhere than in Canada	4,331,549 94	
Other Current Loans and Discounts in Canada (less Rebate of Interest)	23,336,070 44	
Other Current Loans and Discounts elsewhere than in Canada (less Rebate of Interest)	7,225,512 48	
Liabilities of Customers under Letters of Credit, as per contra	883,428 48	
Real Estate other than Bank Premises	29,235 97	
Overdue Debts (estimated Loss provided for)	217,878 09	
Bank Premises at not more than Cost, Less Amounts Written off	2,301,109 37	
Deposit with the Canadian Minister of Finance for the Purpose of the Circulation Fund—		
Dominion of Canada 3¼ per cent. Bonds, £250,000 @ 95%	\$1,166,479 17	
Cash	219,215 49	
	1,385,694 66	
Deposits in the Central Gold Reserves	800,000 00	
Other Assets and Accounts not included in the Foregoing	658,610 27	
	\$67,785,957 95	

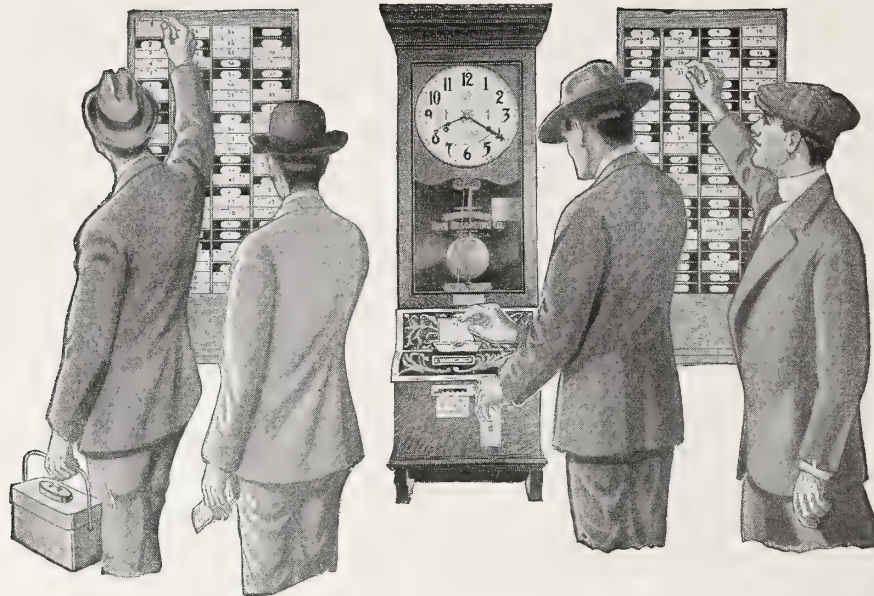
H. B. MACKENZIE, General Manager.

E. A. HOARE, J. H. BRODIE, Directors.

We have examined the above Balance Sheet with the Books in London, and the Certified Returns from the Branches, and we report to the Shareholders that we have obtained all the information and explanations we have required, and that in our opinion the transactions of the Bank which have come under our notice have been within the powers of the Bank. As required by Section 56, Clause 19, of the Bank Act of Canada, we visited the Chief Office (Montreal) of the Bank and checked the cash and verified the securities and found that they agreed with the entries in the books of the Bank with regard thereto. We further report that, in our opinion, the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Bank's affairs according to the best of our information and the explanations given to us as shown by the books and returns.

London, 26th February, 1917.

N. E. WATERHOUSE, FRANK S. PRICE, Auditors.



Above shows the well-known International Card Time Recorder in operation.

International Time Recorders

An honest policy—an honest service—an honest product has built up our great success over 30 years. It is doubtful if there is any known contrivance more necessary to the employer of labor, large and small, than the International Time Recorder. This is proven by the thousands of successful firms who use them and who, by so doing, back up our statements.

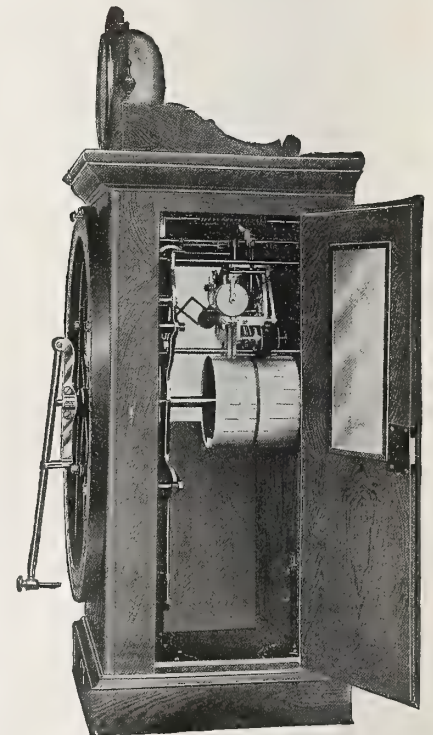
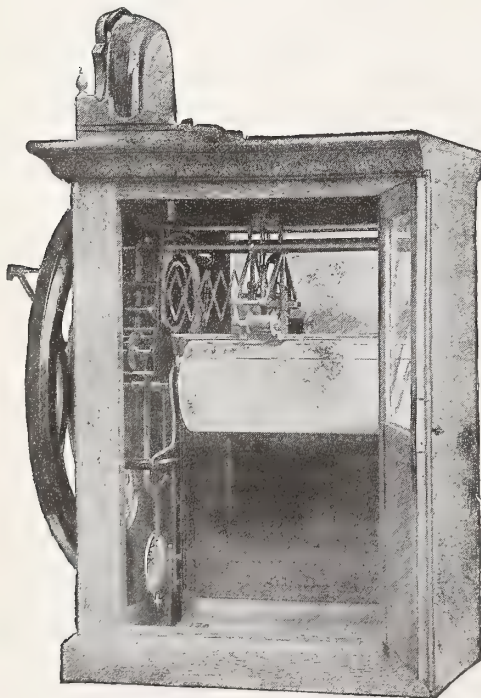
International WEEKLY Dial Recorder

Shown at left—gives in complete form an entire week's payroll, which can be filed in a binder, replacing old style payroll book.

International Double Drum DAILY Dial Recorder

Shown at right — one drum for yesterday's record — the other for to-day's. The "yesterday record" can thus be removed any time to-day without interfering with the current record. An invaluable method of securing daily distribution costs.

We have some new, very interesting folders to send you.



The International Time Recording Co. of Canada, Limited

Anderson St., TORONTO—F. E. MUTTON, General Manager

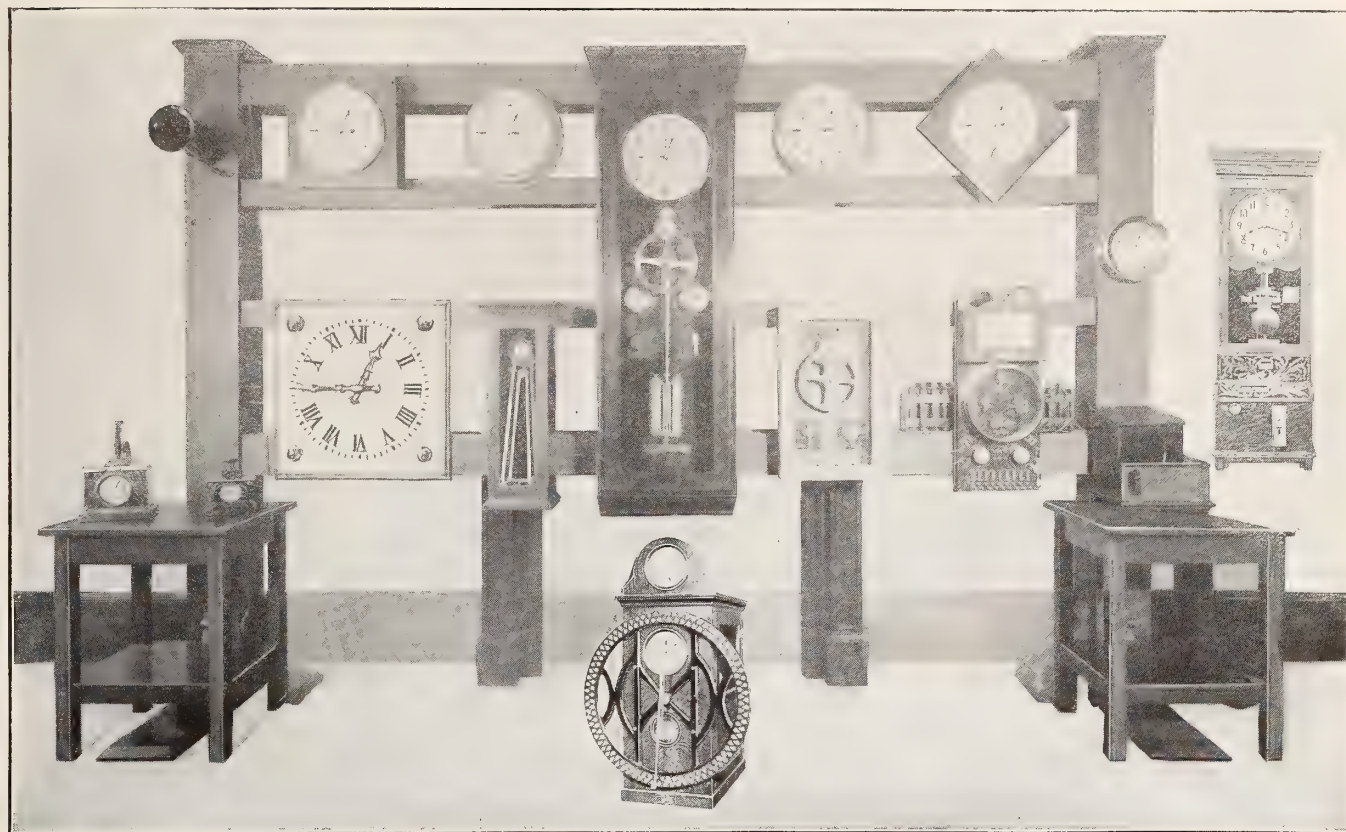
WINNIPEG :
400 Electric Railway Bldg.

VANCOUVER :
817 Pender St. W.

MONTREAL : Cartier Bldg.
Cor. McGill and Notre Dame Sts.



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Finest Electrical Time Equipment in the World—an I.T.R. Exhibit

Recently shown before a big convention of Chartered Accountants with whom its precision and money-saving value made a deep impression.

International Time Recorders

The exhibit comprised the following electrically operated devices, all controlled by the Master Clock shown in the centre:

Secondary Clocks
Program Device
Bill Ringing Device

Time Stamps
Engine Room Clock
Cost Recorder

Electric Signal Horn
Elimination Wheels
Potentiostat

The Potentiostat is a remarkable device for automatically charging duplicate sets of storage batteries. It also automatically detects "grounds."

The above display also includes the famous International Time Recorders—Card (at right) and Dial (centre).

We are prepared to handle any time-recording or cost-keeping problem, no matter how unusual. Our equipment is already in use in many of the largest plants in Canada.



The International Time Recording Co. of Canada, Limited

Anderson St., TORONTO—F. E. MUTTON, General Manager

WINNIPEG:
400 Electric Railway Bldg.

VANCOUVER:
817 Pender St. W.

MONTREAL: Cartier Bldg.
Cor. McGill and Notre Dame Sts.

When writing advertisers, please mention INDUSTRIAL CANADA.

Windsor Cheese Salt

Made in Canada

IF

Your Local Distributor Cannot Supply You—

Railway embargoes, car shortages, and other abnormal conditions entirely beyond our control have left some of our local distributors unable for the present to supply demands for Windsor Cheese and Dairy Salts.

In order to prevent inconvenience being caused to Cheese Factories and Creameries, we will make shipment by local freight, on receipt of advice that Windsor Salt cannot be obtained.

Dealers are requested to advise us by mail if this special service is required.

THE CANADIAN SALT CO., LIMITED
WINDSOR - ONTARIO

Windsor Dairy Salt

Made in Canada

Old Tyme Pure Maple Syrup AND Maple Butter

SOLD EVERYWHERE



Maples Limited

Manufacturers and Refiners
TORONTO CANADA

Among the Industries

Under this heading are published items of news of current interest concerning the activities of Canadian manufacturers. Information about changes of interest, enlargement of plants, and plans for future developments are always welcome, and are published free of charge, provided they should not be properly classified as advertisements.

* Items prefixed with an asterisk are based on official information received in each case from the companies mentioned. Other items, while secured usually from reliable sources, have not the same authoritative origin.

ALBERTA.

Calgary.

W. J. C. Madden has offered W. B. Barbour, representing Wm. Barbour & Sons, linen thread manufacturers, of Belfast, Ireland, a site of 100 acres, near Calgary Junction, as a site for their proposed factory to be located in this city at an early date.

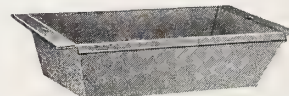
Edmonton.

Work will start shortly on an addition to the cement plant of the Edmonton Portland Cement Company, McLeod Block, Edmonton.

Lethbridge.

It is stated that Allison Milling and Elevator Company contemplate the erection of a large grain elevator at Lethbridge, providing the Dominion Government does not establish one there.

STEEL FACTORY EQUIPMENT



Steel Shop Boxes, Foundry Boxes, Shelf Boxes, Shop Barrels, Stools, Oily Waste Cans, Garbage Cans.

Gasoline Tanks and Pumps, Pressure Tanks, Storage Tanks, Smoke Stacks.

Anything in Black or Galvanized Sheet Metal up to $\frac{1}{8}$ thickness. Send blue print or rough drawing and get our prices.

Sheet Steel Sundries for manufacturers is one of our specialties.

Write us

The Steel Trough and Machine Co. Limited
TWEED, ONT., CANADA

EXPORTERS OF

Reed Organs, Piano Stools,
Music Cabinets.

Catalogue B.



The Goderich Organ Co. Limited
GODERICH, CANADA



Closet Seats,
Flush Tanks,
Medicine Cabinets,
Everything for the Bathroom.

Write for Catalogue C and Price List.

MANUFACTURING SITES AND BUILDINGS

Special Sale of Desirable Properties

LOCATIONS—*The Rathbun Company*, having discontinued the manufacture of Lumber, etc., have some very desirable properties at Deseronto, Ontario, to dispose of, which are especially adapted for manufacturing purposes, consisting of large

Stone Saw Mill Building, Machine and Blacksmith Shops, Car, Ship and Other Woodworking Plants, Coal Yard, etc., etc.

with large area of STORAGE GROUNDS. Extensive frontage on the Bay of Quinte with SPACIOUS DOCKS AND RAILWAY TRACKS. Also VACANT LANDS suitable for factory sites. Rail and water transportation facilities. CHEAP POWER supplied by The Hydro-Electric Power Commission of Ontario.

Deseronto is situated on the Main Line of The Canadian Northern Railway about midway between Toronto and Montreal. Corporations or individuals seeking sites for location in Canada will find it to their advantage to correspond with

THE RATHBUN COMPANY

DESERONTO

ONTARIO

CANADA

STRUCTURAL STEEL WORK OF EVERY DESCRIPTION.

BUILDINGS

BRIDGES

PENSTOCKS

ROOF TRUSSES

COLUMNS, ETC.



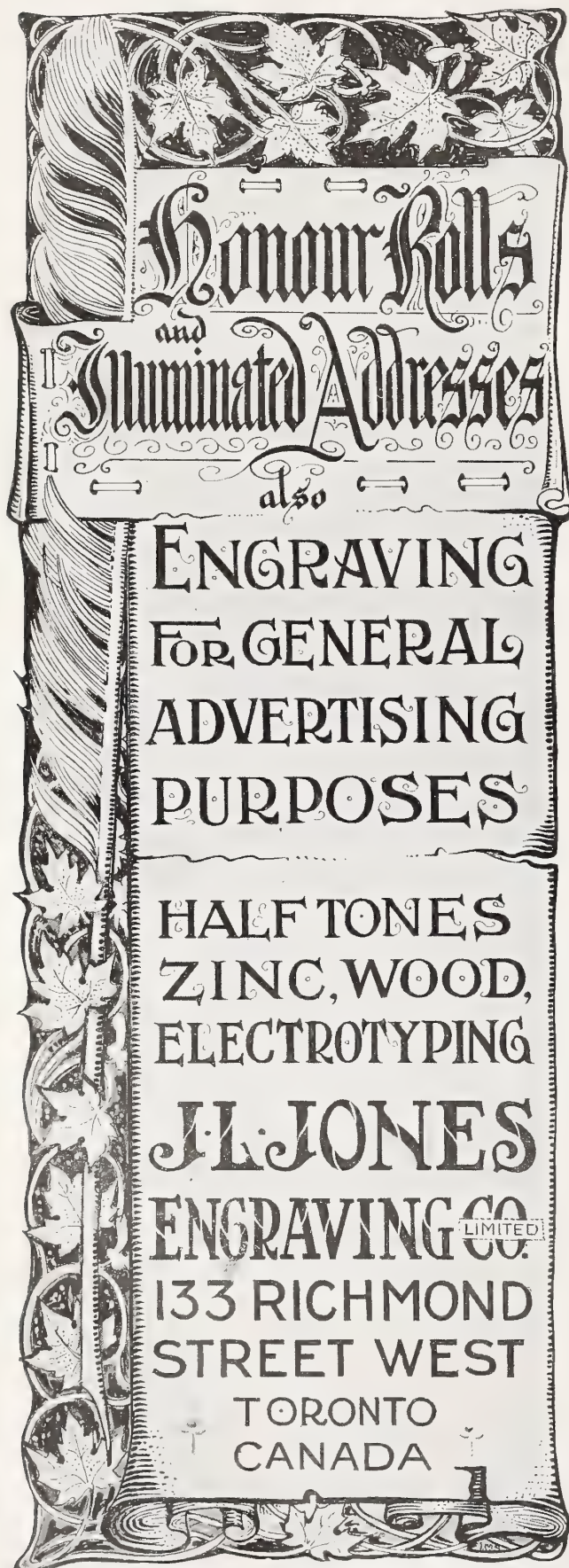
Main Plant of **MACKINNON, HOLMES & CO., LIMITED, SHERBROOKE, QUE.**

Have you considered the advantages of Smart-Turner Steel Barrels?

If not, it will pay you to send
for No. 13 catalogue.

The Smart-Turner Machine Co., Ltd.
Hamilton - Canada





Honour Rolls
and
Illuminated Addresses
also

**ENGRAVING
FOR GENERAL
ADVERTISING
PURPOSES**

**HALF TONES
ZINC, WOOD,
ELECTROTYPING**

J. L. JONES
ENGRAVING CO. LIMITED

**133 RICHMOND
STREET WEST**
**TORONTO
CANADA**

BRITISH COLUMBIA.**Ladysmith.**

The Ladysmith Smelting Corporation, Limited, intend to expend \$100,000 for enlargements to present smelter.

Ocean Falls.

It is expected that the large new paper plant of the Pacific Mills Company, Limited, now nearing completion, will probably be ready for operation about April 15. The buildings which are being constructed of steel and concrete, furnish a total floor space of approximately 350,000 square feet, with machinery and equipment capable of producing 100 tons of paper daily. The company is owned and controlled by the Crown-Willamette Paper Company, of Portland, Oregon.

NEW BRUNSWICK.**St. John.**

It is reported here that a plan to establish a steel ship-building plant on the Miramichi River in Northern New Brunswick is being worked out. Two million dollars is said to be the capitalization. Montreal money is understood to be in the deal.

ONTARIO.**Brampton.**

The Gummed Paper, Limited, are considering the erection of a two-storey addition to their factory.

Bridgeburg.

The Chicago Bridge & Iron Works have decided to erect an addition to their plant.

Chatham.

The ratepayers have carried a by-law granting a site of 11 acres, valued at \$5,500, to Libby, McNeil and Libby Company of Canada, for the establishment of a large packing and pickling plant. The company is also granted a fixed assess-

Glues, Gelatines Size, Isinglass,
Manures, etc.

THE GROVE CHEMICAL CO., LIMITED

Manufacturers (Estd. 1856)

APPLEY BRIDGE, Nr. WIGAN, ENG.

Offer all grades in large and small quantities for immediate shipment and contract bookings.

Enquiries for Samples and Quotations promptly attended to, and Orders Booked at Toronto.

Write or phone Canadian Agent

J. B. KEEBLE - 53 Yonge Street - TORONTO
Main 2562

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Solicitors of Patents

Counsel, Solicitors and Experts in

PATENT SUITS

Agencies in the leading countries of the World.
EDWARD MAYBEE, Mech. Eng. I. F. EDGAR, Counsel.
59 YONGE STREET, TORONTO

WELDING AND CUTTING



Results are certain when a steady flow of pure acetylene gas is secured. Without this, it is practically impossible to secure the even, intense flame so necessary for effective welding and cutting.

Welders, realizing this, are now using

IMPERIAL CARBIDE

because it produces acetylene of unusual purity.

IMPERIAL CARBIDE is a superior grade of Calcium Carbide—made by the most modern methods from the best raw materials obtainable.

Imperial Carbide can be obtained direct from our Works or from any of our distributing points conveniently located throughout Canada.

Write for quotations and further information.

Union Carbide Company of Canada, Limited

Works : WELLAND

Head Office : DOMINION BANK BLDG., TORONTO



Low-Priced Power

What with railway tie-ups, coal strikes and increases all along the line the power user has lots to worry about. That is, unless he uses Hydro, which exists only to cut the cost of power and increase its supply. "The more it's used the cheaper it gets—supplied at cost, always."

Toronto Hydro-Electric System

226 Yonge

Phone Adel. 2120

PRESSES

Made in Canada

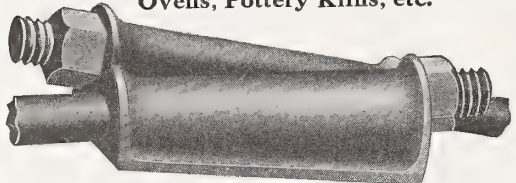
HYDRAULIC PRESSES, PUMPS AND ACCUMULATORS

Forging, Nosing and Marking Presses for all Size Shells
Presses for General Purposes

**WILLIAM R. PERRIN, Limited, TORONTO
CANADA**

LUGS FOR BANDS

On Silos, Tanks, Water Pipes, Penstocks
Ovens, Pottery Kilns, etc.



Ask
for
Price
List

For round Rods $\frac{3}{8}$ to $1\frac{1}{2}$ inch

Flat Bands 2 to 6 inches wide

Best Malleable Iron—Prompt Shipments.

**OTTERVILLE MFG. CO., LIMITED
OTTERVILLE, ONT.**

ment of \$5,500 for a period of ten years, with the usual exemptions of local improvement and school taxes. The firm, which is a branch of the Chicago packing house of the same name, will make an initial expenditure of more than \$100,000 on a plant to care for business in Canada and the British possessions.

Dundas.

John Bertram & Sons Co., Limited, Hatt Street, will erect an office building immediately. The estimated cost is \$30,000.

Guelph.

General contract has been awarded for the erection of an addition to the factory of the Page-Hersey Iron, Tube and Lead Company, Limited, to cost \$3,200.

Tenders are now being received for the construction of an addition to the plant of the International Malleable Iron Company. The new building will be 216 feet long, one storey high.

Haileybury.

The Riordon Pulp & Paper Co., Limited, 1 Beaver Hall Square, Montreal, have appointed an architect for a sulphite plant of 500 tons daily capacity.

Hamilton.

Tenders are being received for the erection of a one-storey brick addition to the factory of the Wentworth Mineral Water Company, Main Street East, costing \$4,000.



Why Pay Freight on Wooden Boxes?

MARTIN

Corrugated Shipping Cases

Are made from special fibre stock, and are constructed so as to protect the goods from damage or breakage. At the same time saves 75 p.c. of weight of wooden cases.

These boxes comply with the freight classification and are accepted at the same rate as goods packed in wooden boxes. Can be used for shipping by freight or express any goods in reasonable weight package.

Write for catalogue and sample. Give inside dimensions and weight of contents.

Martin Corrugated Paper & Box Co., Ltd.

Office and Factory - - 353 Pape Avenue, Toronto

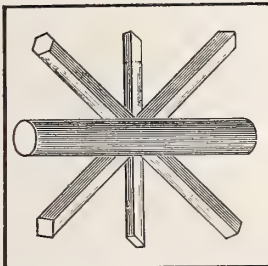
STEEL BARS

ROUNDS, SQUARES, FLATS, ANGLES AND SPECIAL
SECTIONS FOR AGRICULTURAL IMPLEMENTS

Prompt Shipment from Stock

BURLINGTON STEEL CO., Ltd.

HAMILTON - CANADA



COLD DRAWN, TURNED AND POLISHED STEEL

SHAFTING

ROUNDS, SQUARES, HEXAGONS AND FLATS

$\frac{1}{8}$ in. to 6 in. Dia.

$\frac{1}{4}$ in. to $2\frac{1}{4}$ in.

$\frac{1}{4}$ in. to $2\frac{1}{4}$ in.

up to $1\frac{1}{2}$ in. x 3 in.

FREE CUTTING SCREW STOCK

PISTON AND PUMP RODS

FINISHED KEYS

The CANADIAN DRAWN STEEL CO., Limited
HAMILTON, ONTARIO

"CRANES MADE IN CANADA"



ELECTRIC TRAVELING CRANES

HAND POWER TRAVELING CRANES

ELECTRIC HOISTS

AIR HOISTS

FOUNDRY EQUIPMENT

NORTHERN CRANE WORKS, LIMITED

WALKERVILLE, ONTARIO

UNION DRAWN STEEL CO., Limited

HAMILTON, ONTARIO

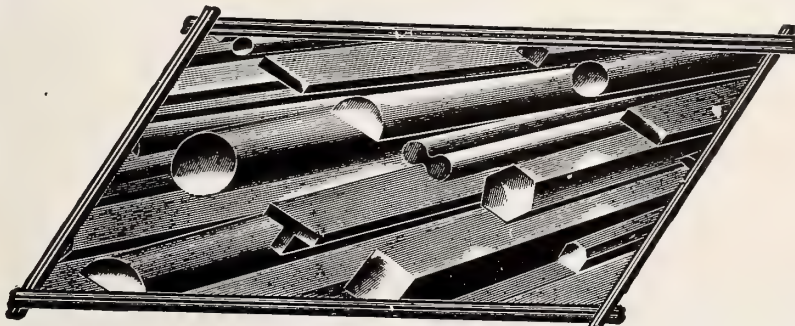
MANUFACTURERS OF

Shafting

Rounds, Flats, Squares
and Hexagons

LARGEST STOCK IN CANADA

Get prices before ordering elsewhere.



AS a practical man it would interest you to see "Famous Five" files being made.

You would be satisfied with the quality of our steel; the processes of shaping, annealing, grinding, cutting, hardening and sand blasting would convince you of the efficiency of the finished product.

And you would have confidence in our method of testing each file before it leaves the factory.

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When writing advertisers, please mention INDUSTRIAL CANADA.

The Carbon and Alloy Steel Company, Limited, has obtained a Dominion charter with an authorized capital of \$1,500,000. This company will erect furnaces and a foundry plant in this city for the manufacture of steel castings, ingots, etc., by the Moffat process. The company will also take over the Moffat-Irving Steel Works, of Toronto, which will be moved here and added to the new plant. Plans have been prepared for buildings that will cost about \$100,000. Another \$200,000 will be spent in furnaces, electrical equipment, conveyers, cranes, compressors and other machinery. This plant when fully equipped will have a gross capacity of 32 tons of molten steel per 24 hours.

The Canadian Westinghouse Company will erect a five-storey office building, to cost about \$150,000.

Tenders are now being received for heating and plumbing for the addition to the factory of Cummer-Dowswell Company, Elgin and Barton streets, to cost \$10,000.

Kincardine.

Council will submit a by-law at once to provide a free site for a \$50,000 factory to be erected by J. B. Watson, who will prepare plans.

Lambeth.

A company now being formed have purchased a site on which they intend to erect a milk factory. T. H. Purdon, 283 King Street, London, is interested.

London.

Penman's, Limited, of Paris, Ont., has decided to open a branch factory here and may erect a new building.

Tenders are being received for the erection of a \$10,000 boiler-house for the Middlesex Mills Company, Dundas Street. The company is considering a \$25,000 addition to factory.

The Quaker Oats Company, which recently took over the plant of the Canadian Cereal and Flour Mills, on Talbot Street, is about to undertake work on an addition to cost \$100,000. Plans for the addition will be handled by the main office in Chicago.

Architects have been appointed to prepare plan for a \$20,000 three-storey addition to the factory of Gorman Eckert Company, Rectory Street.

Marmora.

The saw mill of the Pearce Co., Limited, was destroyed by fire. Loss, \$25,000.

New Toronto.

Brown's Copper and Brass Rolling Mills, Ltd., have erected an elaborate office building adjacent to their mills on the Lake Shore Boulevard, which is practically ready for occupancy. Extensive additions to meet their expanding business have been added to the company's plant during the past two years, which has necessitated larger quarters for their executive staff.

Brown's Copper and Brass Rolling Mills, Ltd., announce that they have awarded a contract to the Southwark Foundry & Machine Co., Philadelphia, Penn., covering the installation of a 2,000-ton hydraulic extrusion press equipment for the manufacture of brass rod. This machine will be in operation during the early part of May next, and with their present equipment in their new rod mill will increase their output to



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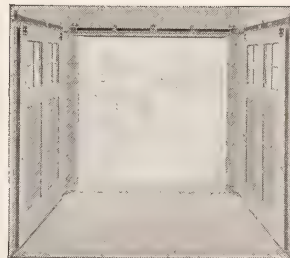
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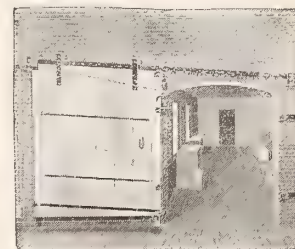
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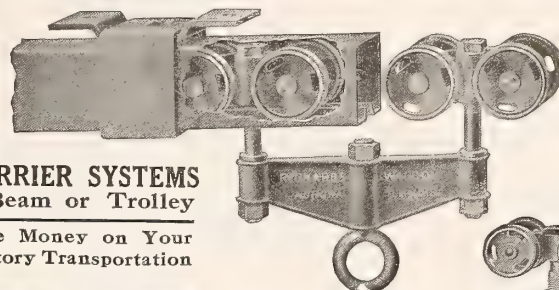
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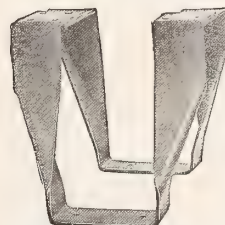


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DOMINION ABRASIVE WHEEL CO., LTD.

NEW TORONTO, ONT. CANADA

When writing advertisers, please mention INDUSTRIAL CANADA.

over five million pounds of finished rod monthly. Their new mill for sheet metals will also be in full swing during May, 1917, increasing the capacity of their sheet mills to over five million pounds monthly. Their combined production will then exceed ten million pounds per month.

Owen Sound.

Contracts will soon be awarded in connection with the erection of a factory for the Keenan Woodenware Manufacturing Company, Third Ave. East.

Peterborough.

The Quaker Oats Co., whose plant was destroyed by fire on December 11th, last year, have reached the decision to rebuild in Peterborough, and on the original location, in consequence of which the ratepayers will vote on a by-law to build a high-level bridge across the Otonabee River, near the new plant, which will permit Trent Canal traffic to the mills. The Government will assist in building the bridge, which, besides accommodating the company, will permit of street railway extensions to the eastern section of the city.

Port Arthur.

Tenders for the construction of the new pulp mill for the Port Arthur Pulp and Paper Company will be called shortly.

Preston.

A by-law authorizing the town to endorse bonds for the Preston Car and Coach Company, to enable them to rebuild their plant recently destroyed by fire, to the extent of \$75,000, was carried by the ratepayers.

Toronto.

Plans are being prepared for a \$50,000 brick addition to the factory of Wilson, Lytle, Badgerow Co., Limited, 112 Duke Street.

Fire destroyed the Queen City Foundry, Ashbridge's Bay; loss \$65,000, of which amount about \$50,000 is to the contents. Patterns valued at \$30,000 and much valuable machinery were totally destroyed. The only insurance carried was \$6,000 on the building.

Canadian Aeroplanes, Limited, Strachan Ave., secured a permit for the erection of a brick addition to their fuselage factory on Dufferin Street to cost \$25,000.

The B. J. Johnson Soap Co., Limited, 155 George Street, have purchased a site and expect to erect a \$50,000 factory and warehouse this spring.

Trenton.

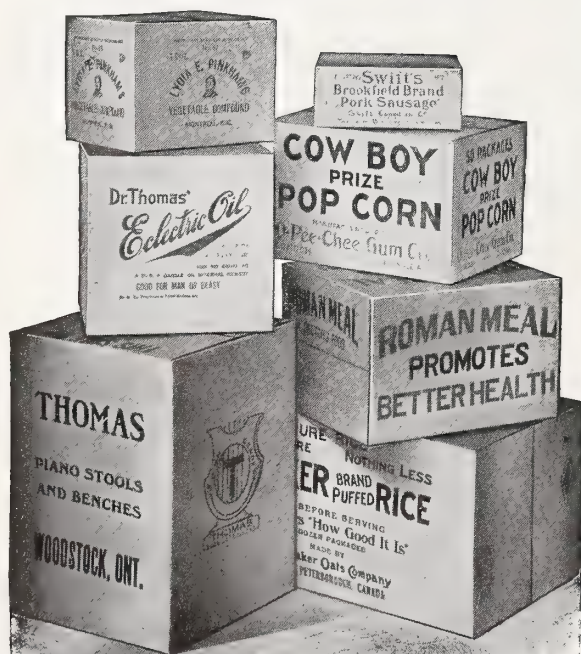
The T. Eaton Company, Yonge Street, Toronto, have purchased a site on which they intend to erect a one-storey stone or brick creamery. Superintendent of Buildings, H. McGee.

QUEBEC.

Delson Junction.

The Mack Brick Co., Limited, just incorporated, have acquired a site and propose to erect a brick-making plant. P. S. McKergow, Secretary of the National Brick Co., of Laprairie, Limited, and L. W. McArthur, General Superintendent of the same company, have resigned their positions, and are interested in the new concern.

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The following are the Factory Inspectors
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W. T. E. BRENNAGH, Port Arthur.
H. A. CLARK, Toronto.
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ROBT. HUNGERFORD, Toronto
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Persons having business with any of the Inspectors should communicate
with them at the Parliament Bldgs., Toronto.

W. A. RIDDELL, M.A., Ph.D., HON. F. G. MACDIARMID,
Superintendent, Minister of Public Works
and Highways.
Phone Main 5800



TRADES AND LABOUR BRANCH

NOTICE

To Manufacturers, Dealers, and
Users of Steam Boilers

All steam boilers built in, or entering the Province of Ontario, and
boilers exchanged or repaired, are subject to Government Inspec-
tion as prescribed in the Steam Boilers Act, 3 George V., C. 61.

*Before any work of repair or alteration is commenced
on any boiler, notice must be sent to the Department stat-
ing the nature and extent of the repairs or alterations pro-
posed to be made. If the Chief Inspector should consider
such repairs or alterations of an extensive character, the
boiler must be inspected in accordance with the Regula-
tions by an Inspector authorized under the Act.*

All communications should be addressed to the Steam Boiler
Branch, Department of Public Works, Parliament Bldgs., Toronto.

HON. F. G. MACDIARMID, D. M. MEDCALF,
Minister of Public Works, Chief Inspector of Steam Boilers.
W. A. RIDDELL, M.A., Ph.D., Superintendent.



TRADES AND LABOUR BRANCH

NOTICE

TO STATIONARY AND HOISTING ENGINEERS

Everyone operating a STATIONARY steam plant of 50 h.p. or
over in the Province of Ontario must hold a Stationary Engineer's
Certificate from the Board of Stationary and Hoisting Engineers.
Anyone operating such a plant without a Certificate is liable to the
penalties set forth in the Stationary and Hoisting Engineers' Act.

Everyone operating a HOISTING steam plant working at a
pressure of 20 pounds or over irrespective of horse power, and used
for hoisting in structural operations or excavating purposes, in the
Province of Ontario, must hold a Hoisting Engineer's Certificate
from the Board of Stationary and Hoisting Engineers. Anyone
operating such a plant without a Certificate is liable to the
penalties set forth in the Stationary and Hoisting Engineers' Act.

Application forms for obtaining STATIONARY or HOISTING
Engineers' Certificates may be had upon applying to the Chairman.

HON. F. G. MACDIARMID, W. C. MCGHIE,
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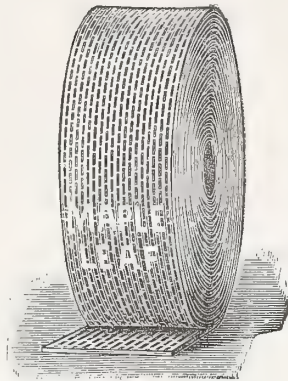
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Joliette.

Work will start in June by day labor on the erection of a one-storey frame canning factory, to be erected by Vital Marcil, P. O. Box 93, at a cost of \$4,000. Owner is in the market for various supplies.

Montreal.

The erection of a \$100,000 factory is being considered by the Northern Toys and Turning Company, Limited, 703 Power Building.

Contract has been awarded for the erection of an \$80,000 factory for the Thomas Davidson Manufacturing Company, 187 Delisle Street. Prices are wanted immediately on one second-hand 3-ton Scotch derrick and one 55-foot boom.

St. Hyacinthe.

Tenders are now being received by Duclos and Payan for the erection of a two-storey brick extension to their factory.

Three Rivers.

Contract has been awarded for the erection of a \$100,000 addition to the factory of La Fonderie d'Acier des Trois Rivières, Limited.

SASKATCHEWAN.

Moose Jaw.

Sums totalling \$100,000 will be spent by the Robin Hood Mills Company in the expansion of their premises.

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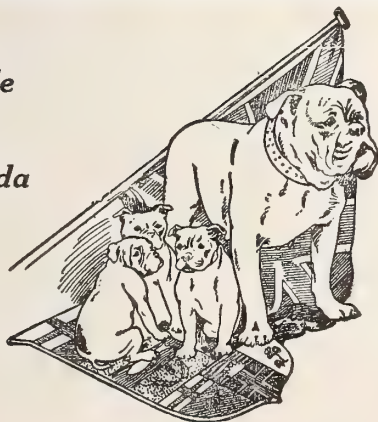
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New Incorporations

Information about various new and old enterprises, the incorporation of which has been announced in recent issues of the Canadian and Provincial Gazettes.

Another hint as to the closeness of the approach of the coalless age is given in the incorporation of the Canadian Electric & Gas Heater Co., Limited, of Montreal. They are empowered to make all sorts of stoves and heaters and to utilize \$250,000 capital in doing so.

Some St. Catharines men have picked out Goderich as a likely place for building ships. The name of this new company is The National Shipbuilding Co., Limited, and the capital is \$100,000.

The Dodge Brothers, Detroit, are following the good example of some of their competitors and have taken out Canadian Letters of Incorporation under the name of Dodge Brothers Motor Co., Limited, Windsor, Ontario. The amount of the authorized capital, \$100,000, would indicate that they are at least going to assemble cars in Canada.

The Standard High Speed Steel Hardening Co., Limited, Montreal, are granted powers to conduct foundry and machine shop and to manufacture tools and other apparatus. The capital is \$150,000.

We may learn to say "Thompson's" instead of that other well-known name, when we apply at soda fountains for a certain nutritious drink. We hope that this is not too much to say for the Thompson's Malted Food Co. of Canada, Limited, head office, Windsor, Ontario, who have been incorporated to use \$250,000 capital in the production of food confections and compositions made from milk and cream.

Toronto and Orillia capitalists are interested in a new company called Electric Foundries, Limited, head office, Orillia, capital \$200,000, and the company is empowered to treat ores and produce various electro metals.

The Commercial Sewing Machine Co., Limited, of Toronto, has an Ontario charter and an authorized capital of \$250,000. Does this indicate that we are going to have another sewing machine factory in Canada producing machines for manufacturing purposes?

THE FUEL QUESTION.

With the continued advance in the price of gasoline, and the difficulties in using kerosene, the question of alcohol is again coming to the front. The sources for making alcohol are so numerous and cheap, and the process so simple that it seems a pity that the production of this valuable fuel is not sufficient to be of practical use; but governmental restrictions are so onerous that only a large concern can at present undertake its manufacture, and as matters now stand these restrictions could result only in another monopoly which could set its own prices. If the regulations could be modified many a farmer could easily make all the alcohol he needed for his own use, for alcohol can be made from potatoes, barley, rye, apples, corn, corn stalks and cobs, sugar beets and a host of other materials obtainable on the farm, many of which are now waste materials, but the fear that he will drink it instead of using it for technical purposes is at present too

ESTABLISHED 1875

The Boiler Inspection and Insurance Co. of Canada

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In conjunction with our Protecto and Protectocoat Preservatives your coal bill will be at minimum possible with to-day's high cost per ton and perhaps even save a shut down for want of coal.

Get Booklets regarding these materials and particulars of the thousand articles we can supply made of VULCANIZED FIBRE.

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ONE hundred Norways in one with its fjords, snowcapped mountains, glittering blue-green glaciers, mighty rivers, tumbling cascades, Indian villages and totem poles.

Travel luxuriously and
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along the 1,000 mile protected inland route, among unnumbered islands, that makes for a safe and quick passage.

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Regular monthly sailings from Montreal in Summer and St. John, N.B., in Winter, calling at Cape Town, Algoa Bay (Port Elizabeth), East London, Port Natal (Durban) and Delagoa Bay in the order named.

Sailings 20th of each month.

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Through bills of lading issued to all points in Australia, New Zealand, Tasmania and other islands of Oceania.

Marine Insurance effected at rates equal to those given from New York.

For rates and other information apply to

The New Zealand Shipping Co.
LIMITED

213 Board of Trade Building, Montreal

strong for our legislators to take a practical view of the question. Possibly when strict liquor laws prevail throughout the country we may get around to a realization of the amount of valuable material that we are now wasting.

AFTER SOUTH AMERICAN BUSINESS.

A Canadian Firm's Enterprise in Cultivating the Field in Latin America.

Jenkins Bros., Ltd., Montreal, manufacturers of brass and iron body valves of every description, have more securely entrenched themselves in the leading markets of South America, having lately sent a special representative to look over the situation, with a view to extending trade relations there. The territory having been traversed successfully, a follow-up system has been inaugurated whereby their products will be given all publicity possible.

In this connection they have issued new catalogues, one No. 8-S., printed in the Spanish language, and another, No. 8-P., in Portuguese, both of which fully describe and illustrate valves and mechanical rubber goods suitable for the requirements of up-to-date power and industrial plants, mines and office buildings.

Jenkins Bros.' valves can be found in operation at all corners of the globe, which is eloquent proof of the esteem which they have gained through service and stability abroad. Valves with screwed ends are supplied tapped with either American or British standard threads to meet the demands of customers in other lands.

The Coleman Fare Box Company, Limited, has removed its plant from Tottenham, Ont., where the business was founded, to 1191 Bathurst Street, Toronto.

THOS. MEADOWS & CO.

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FREIGHT CONTRACTORS
FREIGHT BROKERS
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132 MILLIONS

During 1916 there were handled over the lines of the Canadian Northern Railway System one hundred and thirty-two million bushels of grain.

This fact is remarkable—for two important reasons. The first of these is that the bulk of it was wheat destined to feed the Allies across the Atlantic; the second, to quote from the "Manchester (England) Guardian," that it was "gathered mainly from country opened up by the railway, and tilled for the first time within the last fifteen years."

Twenty years ago the men who were directing the outflow of British gold diverted but little to Canada. Then arose the necessity that plans be prepared to provide for the feeding of the people of the British Isles in the event of the Motherland becoming involved with European powers of the first class. Canada was closest of all Britain overseas. Wheat lands stretched as far as eye could reach. The few people then in the West were clamoring

for more people to till the soil, and for colonizing railways to make that tilling possible.

Financiers in London turned the key, the gold of Britain was set to work in Canada, and the Canadian Northern Railway was commenced; British gold continued steadfast until the transcontinental system was practically completed.

Gold from Britain, the robust faith of Canadians in the destiny of Canada, and the constructive genius of its founders, compounded, made possible the Canadian Northern Railway System—made possible that bountiful supply of wheat for overseas, and made possible the purchasing of vast supplies of goods produced in industrial plants in Eastern Canada, and other parts of the world.

The market "created" by the Canadian Northern is a great market—one that will stand investigation. And such investigation will probably result in more business for the manufacturers of goods western Canadians use. The Canadian Northern seeks to give a complete service to this market.



Test Canadian Northern Railway Service

Principal Agencies: Halifax, N.S.; Quebec, Que.; Montreal, Que.; Ottawa, Ont.; Toronto, Ont.; Port Arthur, Ont.; Winnipeg, Man.; Regina, Sask.; Saskatoon, Sask.; Prince Albert, Sask.; Edmonton, Alberta; Calgary, Alberta; Kamloops, B.C.; New Westminster, B.C.; Vancouver, B.C.; Victoria, B.C.



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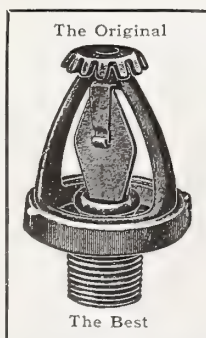
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STUPENDOUS CONSUMPTION.

A Single Issue of a New York Newspaper's Sunday Edition
Edition Requires Fifteen Acres of Forest.

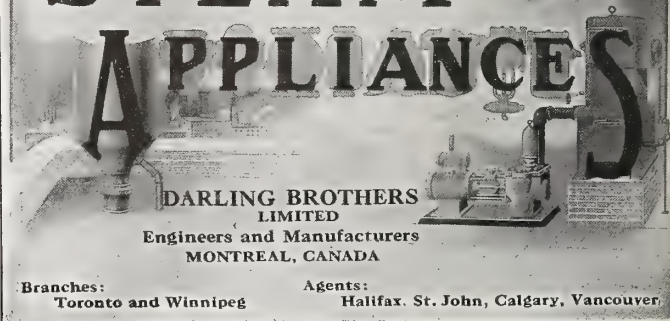
In an address delivered at Vancouver before the first meet-
ing of the Canadian (Pacific) branch of the British Society
of Chemical Industry, Dr. R. H. Clark, M.A., Ph.D., of the
University of British Columbia, made the following reference
to the forest wealth of British Columbia:

"Lumbering is our third greatest industry. The United
States forest service has estimated that in from twenty to
thirty years their forests will be depleted. In Canada and
the United States we use 500 feet per capita per annum
against 60 feet per capita in Europe.

"A single issue of a New York newspaper's Sunday edition
requires fifteen acres of forest.

"The waste of our timber resources is due to fire, careless
logging, wasteful mill operations, and overproduction. In all,
it is claimed 75 per cent. of our forest products are wasted,
20 per cent. of the log (the upper part) is left in the woods
to rot or burn, and one-third of the slab residue is consumed
in refuse burners. The importance of the forests arises not
solely from their being the source of our timbers, but, still
more important, because of their bearing upon our water
supply. In forest cover not only is erosion impossible, but
the rains evaporate more slowly, the snows melt less rapidly,
the run-off is gradual, floods cease, and streams are available
for water power. 'When the forests fail, every man, woman,
and child will feel the pinch.' The problem has been solved
in Europe. The forests of Germany are 300 per cent. better
than seventy years ago, and the yield per acre sevenfold what
it was. Let us agitate to have the same problem solved here
while there is plenty of time."

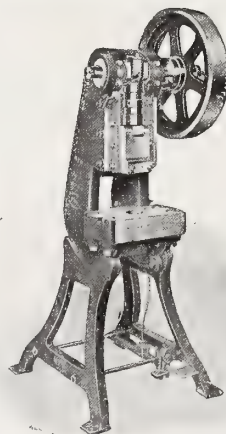
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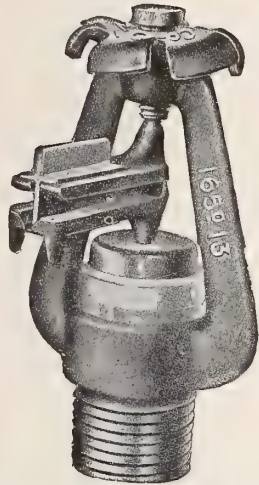
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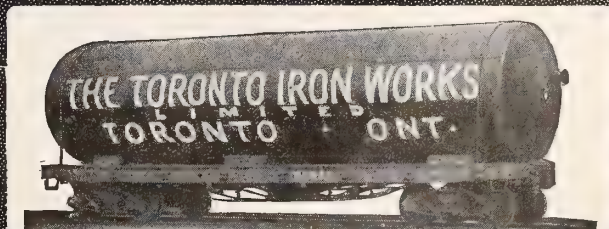
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BRITISH GOLD IN CANADA.

One Important Effect of the Employment of British Capital in Developing the Resources of the Dominion.

Since August 4th, 1914, the world has had a most complete demonstration of the sterling efficiency at the root of Britain's financial strength. She has shouldered the greatest financial load in history, and yet appears to be strong enough to take her place again as the leading financial nation of the world, once peace is declared in Europe. This stability of Britain is not a result of accidental distribution of money throughout the world. British supremacy in world trade, has resulted from the investment of her surplus funds in all parts of the world, but chiefly in the unpeopled portions of the earth's surface, where resources were clearly abundant, but the means of access absent owing to lack of funds of the nations holding title to the natural wealth.

Careful students of development in Canada, because of this fact, should be interested in a paragraph of the last Annual Report of the Canadian Northern Railway System, which was issued recently. This paragraph deals with the handling in 1916, over the rails of the Canadian Northern of some 132,000,000 bushels of grain destined chiefly for the feeding of the Allies overseas, and runs:—

"Inasmuch as many of the security-holders invested their funds in the Company's undertakings, believing that the heart of the Empire would some day need to draw heavily upon the wheat-fields of the Canadian West, it is with pride that the directors present these figures, illustrating the extent to which the prairies have been opened up, made productive and the produce marketable by the Company's railways. There were probably few who thought that the crucial necessity would come so soon; but, having come, it must be considered fortunate that the Canadian Northern System and the country tributary to it were sufficiently developed to take an important part in supplying the Empire's food requirements."

The nearness of Canada to Britain, as compared with other British Dominions overseas, and the uncounted millions of acres of virgin wheat lands west of the Great Lakes, were factors favoring the diversion of private funds from Britain to the Dominion. The money was to go into the construction of colonizing railways to open that vast fertile acreage to development as potential wheat-bins for the people of Great Britain in peace times, and as a guarantee of a steady supply of wheat at least, in the event of Britain becoming involved in hostilities with any European power of the first-class.

Therein lay one of the chief reasons for the origin of the Canadian Northern Railway System in Manitoba in 1896. Apparently the ability to grow wheat of the country it is proposed to open up, and the backing the people of that province granted the enterprise, were sufficient inducements to the men directing the surplus gold of Britain, and the funds necessary to complete the initial construction were readily forthcoming. Until the commencement of hostilities in Europe in 1914, British gold continued steadfast, and as the Canadian Northern extended its network of lines throughout the Prairie Provinces, before reaching out with its easy grade lines to the seaports on the east, and on the Pacific, a steadily increasing supply of wheat was moved out from the territory cultivated for the first time by the settlers who had poured in hard upon the heels of its construction gangs.

But the effect of the investment of this British gold in the Canadian Northern Railway is not confined to the production of foodstuffs transported across the Atlantic to feed the war-occupied nations of Europe. Every settler in the vast regions opened up by the lines of the railway, has been a customer for the goods produced in the industrial establishments in Eastern Canada, in the United States, and in Europe. It would be almost impossible to compute the number of the army of workmen who have drawn their wages in this

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PARIS : : : CANADA

indirect way from the western wheat-bin, and no figures have been compiled to show the extent and value of the business provided the manufacturers of Eastern Canada by the opening up of that vast western market.

The expectation that once peace is concluded, there will be a movement from abroad to the fertile lands of Western Canada, greater than anything the country has yet experienced, is growing into a fixed belief. Should it so develop, the addition to the business of the industries in Ontario and Quebec, will be enormous, and new armies of workmen will be engaged upon the task of supplying the needs of western people.

British gold—and since the war, American gold—has been the means of facilitating a great deal of the development in Canada in other ways, but there can scarcely be any doubt that its greatest achievement in this country, has consisted in the furnishing of the funds for the building of the railways

opening up unpeopled territories within the Dominion. For, upon the development of those territories, a great deal of the prosperity of all the people in Canada depends.

HOW INDUSTRY GROWS.

According to a recent statement made by Wm. P. Fitzsimons, Commissioner of Industries, Grand Trunk Railway, new industrial plants representing a capital investment of nearly \$12,000,000 have been established along the company's lines in Eastern Canada within the last twelve months. These new industries number approximately seventy-five, and will employ more than 10,000 hands when in full operation. An additional \$5,000,000 was spent in that period in extensions to manufactories, providing work for another 4,000 men. Since 1910, five hundred industries with a total investment of about \$190,000,000 have been established.

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BUYERS' GUIDE TO CANADIAN MANUFACTURES

*A List of Articles which will Enable the Purchaser to Know the Manufacturers of
Made-in-Canada Goods. For Rates of Insertion in this Department write
to the Advertising Manager of "Industrial Canada," Toronto*

ABRASIVE MATERIALS

- *Canadian Hart Wheels, Ltd., Hamilton, Ont.
- *Dominion Abrasive Wheel Co., New Toronto, Ont.

ABRASIVES

- *D. A. Brehner, Ltd., Toronto.

ACCOUNT BOOKS

- *The Brown Bros., Ltd., Toronto.

ACETYLENE GAS BURNERS

- Economic Acetylene Burner Co., Toronto.

ACIDS

- *The Grasselli Chemical Co., Ltd., Toronto.
- *The Nichols Chemical Co., Ltd., Montreal.

ADVERTISING NOVELTIES

- Lawson & Jones, Ltd., London, Ont.

AERATED BEVERAGES

- Charles Gurd & Co., Ltd., Montreal, Que.
- J. J. McLaughlin, Ltd., Toronto.

AIR COMPRESSORS

- *Canadian Ingersoll-Rand Co., Sherbrooke, P.Q.
- *Jenckes Machine Co., Sherbrooke, P.Q.
- *Smart-Turner Machine Co., Ltd., Hamilton, Ont.

ALCOHOL

- The St. Hyacinthe Distillery Co. Ltd., St. Hyacinthe, Que.
- *Hiram Walker & Sons, Limited, Walkerville, Ont.

ALE

- E. L. Drewry, Winnipeg, Man.

ALUMINUM

- *Northern Aluminum Co., Ltd., 1305 Traders Bank, Toronto.

ALUMINUM CASTINGS

- *Tallman Brass & Metal Co., Hamilton, Ont.

AMMONIA

- Canadian Ammonia Co., Ltd., Toronto.

ANGLE BARS

- *The Steel Company of Canada, Limited, Hamilton, Ont.

ASBESTOS:

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS SHEATHING:

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS SHEET AND PISTON PACKINGS

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS STEAM PIPE AND BOILER COVERINGS

- *Eureka Mineral Wool & Asbestos Co., Toronto.

ASBESTOS TEXTILES:

- *Eureka Mineral Wool & Asbestos Co., Toronto.

AUTOMOBILE ACCESSORIES,

- *Northern Electric Co., Limited, Montreal.
- *Tallman Brass & Metal Co., Hamilton, Ont.

AUTOMOBILE PARTS

- *Dominion Forge & Stamping Co., Walkerville, Ont.

AWNING CORD (cotton)

- Hamilton Cotton Co., Hamilton, Ont.

AXLES

- Canada Forge Co., Ltd., Welland, Ont.
- Guelph Spring & Axle Co., Ltd., Guelph, Ont.

AXLES, carriage and automobile

- Guelph Spring & Axle Co., Ltd., Guelph, Ont.

BABBITT METAL

- Alonzo W. Spooner, Limited, Port Hope, Ont.
- *The Canada Metal Co., Toronto.
- *Tallman Brass & Metal Co., Hamilton, Ont.

BACON

- E. W. Fearman Co., Ltd., Hamilton, Ont.

BAGS

- *Scythes & Co., Ltd., Toronto.

BAGS, Cotton

- The Canadian Bag Co., Ltd., Montreal, Que.

BAGS, jute

- The Canadian Bag Co., Ltd., Montreal, Que.
- *Scythes & Co., Ltd., Toronto.

BAGS, travelling

- J. Eveleigh & Co., Ltd., Montreal, Que.
- Lamontagne, Ltd., Montreal, Que.
- The M. Langmuir Mfg. Co., of Toronto, Ltd., Toronto.

BAKING JAPAN

- *Berry Bros., Ltd., Winnipeg, Man.

BAND RESAWS:

- *P. B. Yates Machine Co., Ltd., Hamilton, Ont.

BANK AND OFFICE RAILINGS

- *The Geo. B. Meadows, Toronto.
- Wire, Iron & Brass Works Co., Ltd., Toronto.

- *Canada Wire and Iron Works, Hamilton, Ont.

BANK FITTINGS

- The Canadian Office & School Furniture Co., Ltd., Preston, Ont.

BANK RAILINGS and CAGES

- *Canada Wire and Iron Goods Co., Hamilton, Ont.
- *Dennis Wire & Iron Works Co., London.

BANK SIGNS and FITTINGS

- *Tallman Brass & Metal Co., Hamilton, Ont.

BARRELS, steel, and containers

- *Smart-Turner Machine Co., Ltd., Hamilton, Ont.

BARS, iron

- London Rolling Mill Co., Limited, London, Ont.

BARS, steel

- London Rolling Mill Co., Limited, London, Ont.

BASEBALL GOODS

- A. J. Reach Co., Brantford, Ont.

BATHS, enamelled

- Amherst Foundry Co., Ltd., Amherst, N.S.

BATTERIES, dry

- The Canadian National Carbon Co., Ltd., Toronto.
- Canadian Carbon Company, Ltd., Toronto.

BEARINGS

- *The Chapman Double Ball Bearing Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BEARINGS, bronze

- *Tallman Brass & Metal Co., Hamilton, Ont.

BEARINGS, pillow block and upright

- *Dodge Mfg. Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BEARINGS

- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BEDS, camp folding

- *Otterville Mfg. Co., Ltd., Otterville, Ont.

BEEF

- E. W. Fearman Co., Ltd., Hamilton, Ont.

BEER

- E. L. Drewry, Winnipeg, Man.

BELTING, chain conveyors

- *Canadian Link Belt Co., Toronto.

BELTING, chains

- *Canadian Link-Belt Co., Toronto.
- *Dodge Mfg. Co., Ltd., Toronto.
- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

BELTING, Elevator

- *Canadian Consolidated Rubber Co., Ltd., Montreal, Que.

BELTING, leather

- The Beardmore Belting Co., Ltd., Toronto.

- *J. L. Goodhue & Co., Danville, P.Q.

- *Sadtler & Howarth, Montreal.

- *The D. K. McLaren Belting Co., Ltd., Montreal.

- *The J. C. McLaren Belting Co., Ltd., Montreal.

BELTING, rubber

- *Canadian Consolidated Rubber Co., Ltd., Montreal, Que.
- *Dunlop Tire & Rubber Goods Co., Ltd., Toronto.

- *Gutta Percha & Rubber, Limited, Toronto.

BELTING, stitched cotton duck

- *Dominion Belting Co., Ltd., Hamilton.

BENT GOODS

- The Crown Lumber Co., Woodstock, Ont.

BICYCLES and ACCESSORIES

- *Canada Cycle and Motor Co., Ltd., Toronto.

BISCUITS

- The Montreal Biscuit Co., Montreal, Que.

BLACK SHEETS

- *A. C. Leslie & Co., Montreal.

BLANKETS

- Slingsby Mfg. Co., Ltd., Brantford, Ont.

- J. Walsham & Son, Ltd., Bolton, Ont.

BLANKETS, horse

- Slingsby Mfg. Co., Ltd., Brantford, Ont.

- J. Walsham & Son, Limited, Bolton, Ont.

BLASTING ACCESSORIES

- Canadian Explosives, Ltd., Montreal, Que.

BLEACHING POWDER

- Canadian Salt Co., Ltd., Windsor, Ont.

BLOWERS

- *Sheldons, Ltd., Galt, Ont.

BOARDS, wood, binder, fibre specialties

- *Beveridge Paper Co., Limited, Montreal.

BOATS of ALL KINDS

- Peterboro Canoe Co., Ltd., Peterboro, Ont.

BOILER COMPOUND and OILS

- Electric Boiler Compound Co., Ltd., Guelph, Ont.

BOILER PRESERVATIVES

- *Beveridge Paper Co., Limited, Montreal.

BOILERS

- *M. Beatty & Sons, Ltd., Welland, Ont.

- *Darling Bros., Montreal.

- *Goldie & McCulloch Co., Limited, Galt, Ont.

- John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.

- *Polson Iron Works, Ltd., Toronto.

- J. & R. Weir, Montreal, Que.

- Taylor-Forbes Co., Ltd., Guelph, Ont.

- *Jenckes Machine Co., Sherbrooke, Que.
- *The Waterous Engine Works Co., Ltd., Brantford.

BOILERS, hot water or steam.

- Steel & Radiation, Ltd., Toronto.

- Warden King, Ltd., Montreal, Que.

BOILERS, steam.

- *Jenckes Machine Co., Sherbrooke, Que.

- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

- Steel and Radiation Ltd., Toronto.

- Warden King, Ltd., Montreal, Que.

- *The Waterous Engine Works Co., Ltd., Brantford, Ont.

BOILERS, steam and brass work

- *The Waterous Engine Works Co., Ltd., Brantford, Ont.

BOILER STANDS

- Anthes Foundry Ltd., Toronto.

BOLSTERS

- *Canadian Car & Foundry Co., Ltd., Montreal, Que.

BOLTS

- *The National Acme Mfg Co., Montreal, Que.

BOLTS AND NUTS

- *The Canadian Tube & Iron Co., Ltd., Montreal, Que.

- *The Steel Company of Canada, Limited, Hamilton, Ont.

- Starr Mfg. Co., Ltd., Dartmouth, N.S.

BOOKBINDERS

- R. G. McLean, Toronto.

- *The Brown Bros., Ltd., Toronto.

BOOKCASES

- *Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

BOOKCASES, sectional (Gunn)

- The George McLagan Furniture Co., Ltd., Stratford, Ont.

BOOKLETS

- Stone Limited, Toronto.

- R. G. McLean, Toronto.

BOOKS, blank

- *The Brown Bros., Ltd., Toronto.

BOOTS and SHOES

- Ames-Holden-McCreedy, Ltd., Montreal, Que.

- J. Leckie Co., Ltd.

- The John Ritchie Co., Ltd., Quebec, Que.

BOXES, cellular board:

- *The Thompson & Norris Co. of Canada, Ltd., Niagara Falls.

BOXES, rattle and soap

- The Arlington Co. of Canada, Ltd., Toronto.

BOXES, steel shop

- *Steel Trough and Machine Co., Ltd., Tweed, Ont.

BOXES and SHOOKS, wooden

- The C. Beck Mfg. Co., Ltd., Penetanguishene, Ont.

BOXES, wooden

- G. & J. Esplen, Montreal, Que.

- Barchard & Co., Ltd., Toronto.

BRAIDS and TRIMMINGS

- The Moulton Mfg. Co., Limited, Montreal.

BRAKE SHOES

- *Canadian Hart Wheels, Limited, Hamilton, Ont.

BRANDS, burning

- Pritchard, Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

BRASS BOLTS and NUTS

- *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS, BRONZE and ALUMINUM LETTERS

- *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS ENGRAVERS

- Pritchard, Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

BRASS FOUNDERS and FINISHERS

- *The Booth-Coulter Copper & Brass Co., Ltd., Toronto.

- *Tallman Brass & Metal Co., Hamilton, Ont.



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BRASS GOODS

- *Penberthy Injector Co., Ltd., Windsor.
- *The Booth-Coulter Copper & Brass Co., Ltd., Toronto.
- *Mueller Mfg. Co., Sarnia.
- The Garth Co., Montreal, Que.
- The James Morrison Brass Mfg. Co., Ltd., Toronto.
- *The Kerr Engine Co., Ltd., Walkerville, Ont.
- *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS PLATES

- Geo. Booth & Son., Toronto.
- *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS RODS, SHEETS AND PLATES

- *Brown's Copper and Brass Rolling Mills, Ltd., New Toronto.

BRASS SIGNS AND MEMORIALS

- *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS TUBING, seamless

- Canadian Seamless Wire Co., Ltd., Toronto.
- *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS WIRE

- Canadian Seamless Wire Co., Ltd., Toronto.
- *Tallman Brass & Metal Co., Hamilton, Ont.

BRASS WORK, church

- Pritchard, Andrews Co. of Ottawa, Ltd., Ottawa, Ont.

BRASS WORK, special

- Bawden Machine Co., Ltd., Toronto.
- *Tallman Brass & Metal Co., Hamilton, Ont.
- *Booth-Coulter Copper & Brass Co., Ltd., Toronto.
- *The Watrous Engine Works Co., Ltd., Brantford, Ont.

BRICK

- National Brick Co. of Laprairie, Laprairie, P.Q.
- Port Credit Brick Co., Port Credit, Ont.

BRICK, enamel

- National Brick Co. of Laprairie, Laprairie, P.Q.

BRICK, pressed

- National Brick Co. of Laprairie, Laprairie, P.Q.

BRICK, rubbing

- *Canadian Hart Wheels, Limited, Hamilton, Ont.

BRICK, sewer

- National Brick Co. of Laprairie, Laprairie, P.Q.

BRIDGES, Railway and Highway

- *Dominion Bridge Co., Montreal.
- *Hamilton Bridge Works Co., Ltd., Walkerville, Ont.
- The Canadian Bridge Co., Ltd., Hamilton, Ont.
- *The Structural Steel Co., Limited, Montreal, Que.

BROOMS

- Simms, T. S., & Co., Limited, St. John, N.B.
- Stevens-Hepner Co., Limited, Port Elgin, Ont.

BRUSHES

- Simms, T. S., & Co., Limited, St. John, N.B.
- Stevens-Hepner Co., Limited, Port Elgin, Ont.

BRUSHES, carbon

- Canadian National Carbon Co., Ltd., Toronto.

BUCKET TANKS

- *The General Fire Equipment Co., Limited, Toronto, Ont.

BUCKLES, shoe and coat

- Parmenter & Bulloch Co., Limited, Gananoque, Ont.

BUILDING BLOCKS, vitrified, salt glazed

- Standard Clay Products, Ltd., St. Johns, Que.

BUILDING FELT and PAPER

- *Eureka Mineral Wool & Asbestos Co., Toronto.
- *Paterson Manufacturing Company, Toronto and Montreal.

BUILDERS, ship

- *Polson Iron Works, Limited, Toronto.
- J. & R. Weir, Montreal, Que.

BURLAPS

- The Canadian Bag Co., Limited, Montreal, Que.
- *Scythes & Co., Ltd., Toronto.

BURLAPS, decorative

- Dominion Oil Cloth Co., Limited, Montreal, Que.

CABLE, copper and galvanized

- *Standard Underground Cable Co., Hamilton.
- *The Steel Co. of Canada, Ltd., Hamilton, Ont.

CABLES, transmission and telephones

- *Eugene F. Phillips Electrical Works, Ltd., Montreal, Que.

CABLES, Transmission and Cable

- *Northern Electric Co., Limited, Montreal, Que.

CABLES, wire

- The Dominion Wire Rope Co., Ltd., Montreal, Que.
- *The B. Greening Wire Co., Ltd., Hamilton, Ont.

CALENDARS, ADVERTISING

- NOVELTIES, etc.
- Rolph & Clark, Limited, Toronto.
- Lawson & Jones, Limited, London, Ont.
- Stone Limited, Toronto.

CAMERAS

- Canadian Kodak Co., Limited, Toronto.

CAMPERS' OUTFITTERS

- Slingsby Mfg. Co., Ltd., Brantford, Ont.

CANOEES

- Peterboro Canoe Co., Ltd., Peterboro, Ont.

CANS, baking powder, etc.

- American Can Co., Montreal and Hamilton.
- A. R. Whittall, Montreal, Que.

CANS, fruit

- American Can Co., Montreal and Hamilton.
- A. R. Whittall, Montreal, Que.

CANS, iron, lead and putty

- A. R. Whittall, Montreal, Que.

CANS, ROVING, ETC., fibre

- *Beveridge Paper Co., Limited, Montreal.

CANS, tin

- A. R. Whittall, Montreal, Que.
- American Can Co., Montreal and Hamilton.

CANVAS

- *Scythes & Co., Ltd., Toronto.

CAPS, cloth

- John W. Peck & Co., Ltd., Montreal, Que.

CARBIDE

- *Canada Carbide Co., Ltd., Montreal, Que.
- *Union Carbide Co. of Canada, Ltd., Works, Welland, Ont. Head Office, Toronto.

CARBON BRUSHES

- Canadian Carbon Co., Limited, Toronto.

CARBON PRODUCTS

- Canadian Carbon Co., Limited, Toronto.

CARBONS, arc light

- Canadian Carbon Co., Limited, Toronto.
- The Canadian National Carbon Co., Ltd.

CARBONS, flame

- Canadian Carbon Co., Limited, Toronto.

CARBONIC ACID GAS

- Canadian Carbonate Co., Montreal.

CARD RECORD SYSTEMS

- *Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

CARPETS AND RUGS

- Toronto Carpet Mfg. Co., Limited, Toronto.

CARPETS AND RUGS, Axminster and ingrain

- Toronto Carpet Mfg. Co., Limited, Toronto.

CARPETS AND RUGS, Brussels and Wilton

- Toronto Carpet Mfg. Co., Limited, Toronto.

CARPET YARNS, worsted and wool

- Toronto Carpet Mfg. Co., Limited, Toronto.

CARRIAGES, baby, etc.

- Canada Furniture Manufacturers, Ltd., Woodstock, Ont.

CARRIERS

- *Richards-Wilcox Canadian Co., Limited, London, Ont.

CARRIERS, box and barrel

- *Canadian Mathews Gravity Carrier Co., Limited, Toronto.

CARRIERS, brick

- *Canadian Mathews Gravity Carrier Co., Limited, Toronto.
- *Richards-Wilcox Canadian Co., Ltd., London, Ont.

CARS

- *Canadian Car & Foundry Co., Ltd., Montreal, Que.
- *National Steel Car Co., Limited, Hamilton, Ont.

CARS, industrial

- Hamman Steel Car and Engineering Works, Hamilton.

CARTONS, lithographed

- Harris Lithographing Co., Toronto.

CASTINGS

- *Tallman Brass & Metal Co., Hamilton, Ont.

CASTINGS, aluminum

- *Booth-Coulter Copper & Brass Co., Limited, Toronto.

CASTINGS, brass

- *Tallman Brass & Metal Co., Hamilton, Ont.
- *Booth-Coulter Copper & Brass Co., Limited, Toronto.

CASTINGS, brass and bronze

- *Tallman Brass & Metal Co., Hamilton, Ont.

CASTINGS, grey iron

- *Dodge Mfg. Co., Toronto.
- *Canadian Car & Foundry Co., Ltd., Montreal, Que.

***The Goldie & McCulloch Co., Ltd., Galt, Ont.**

- *Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.
- John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.

CASTINGS, malleable iron

- *Galt Malleable Iron Co., Ltd., Galt, Ont.
- *Pratt & Letchworth Co., Brantford, Ont.

CASTINGS, steel

- *Canadian Steel Foundries, Ltd., Montreal, Que.
- *Dominion Steel Foundry Co., Ltd., Hamilton, Ont.
- *Hull Iron and Steel Foundry, Ltd., Hull, P.Q.
- *Joliette Steel Co., Ltd., Montreal.
- *Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.

CATALOGUE MAKERS

- Grip, Ltd., Toronto.
- R. G. McLean, Toronto.

CAUSTIC SODA

- Canadian Salt Co., Ltd., Windsor, Ont.

CELLBOARD

- Adams Cellboard Co., Toronto, Ont.

CEMENT GUNS

- Steel and Radiation, Ltd., Toronto.

CHAINS, for elevators, conveyors and drives

- *Canadian Link-Belt Co., Toronto.

CHAIRS

- *Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

CHAIRS, assembly hall

- Stratford Mfg. Co., Ltd., Stratford, Ont.

CHAIRS, folding

- Stratford Mfg. Co., Ltd., Stratford, Ont.

CHAIRS, rattan and upholstered

- Imperial Rattan Co., Ltd., Stratford, Ont.

CHAIR SEATS, fibre

- *Beveridge Paper Co., Limited, Montreal.

CHEMICALS

- *Cosmos Chemical Co., Port Hope.
- *The Grasselli Chemical Co., Ltd., Toronto.
- *The Nichols Chemical Co., Ltd., Montreal, Que.

CHEMICAL LABORATORY

- APPARATUS
- The Geo. M. Hendry Co., Limited, Toronto.

CHICLETS AND CHEWING GUM

- Canadian Chewing Gum Co., Ltd., Toronto.

CIGARS

- Ed. Youngheart & Co., Limited, Montreal, Que.

CIGARETTES AND TOBACCO

- Philip Morris & Co., Limited, Montreal, Que.

CIRCULAR CUTTERS, solid steel

- The Peter Hay Knife Co., Limited, Galt, Ont.

CLAM SHELL BUCKETS

- *M. Beatty & Sons, Ltd., Welland, Ont.

CLOCKS, TIME

- *International Time Recording Co. of Canada, Ltd., Toronto.

CLOCKS, WATCHMEN'S

- *The General Fire Equipment Co., Limited, Toronto.

CLOSET SEATS

- *Goderich Organ Co., Goderich, Ont.

CLOTHING

- John W. Peck & Co., Ltd., Montreal, Que.

- Mackenzie & Co., Ottawa, Ont.

CLOTHING, leather and sheepskin lined coats

- *A. R. Clarke & Co., Ltd., Toronto.

CLOTHING, Mackinaw

- The Carss Mackinaw Clothing Co. Ltd., Orillia, Ont.

CLOTHES LINES, cotton

- Hamilton Cotton Co., Hamilton, Ont.

CLUTCHES

- *Dodge Mfg. Co., Ltd., Toronto.

CLUTCHES, conveyors

- *The Goldie & McCulloch Co., Ltd., Galt, Ont.

COAL

- *Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N.S.
- Standard Fuel Co., Toronto.

COBALT OXIDE

- The Coniagas Reduction Co., Ltd., St. Catharines, Ont.

COCOA AND CHOCOLATE PREPARATIONS

- Walter Baker & Co., of Canada, Ltd., Montreal, Que.

COFFEE

- S. H. Ewing & Sons, Montreal, Que.

COLD DRAWN SHAPES, flats, squares and hexagons

- *The Canadian Drawn Steel Co., Ltd., Hamilton, Ont.
- *Union Drawn Steel Co., Limited, Hamilton, Ont.

COLD STORAGE DOORS

- John Hillock & Co., Ltd., Toronto.

COLLAR BUTTONS

- The Arlington Co. of Canada, Ltd., Toronto.

COLLARS

- The Standard Shirt Co., Limited, Montreal, Que.

COLLARS, coated linen

- Parsons & Parsons Canadian Co., Hamilton, Ont.

COLLARS, shaft

- *Canadian Bond Hanger & Coupling Co., Alexandria, Ont.

COLORS

- Brandram-Henderson, Limited, Montreal, Que.

- A. Ramsay & Son Co., Montreal, Que.

COMBS, fine dressing and name

- The Arlington Co. of Canada, Ltd., Toronto.

COMMERCIAL STATIONERS

- Rolph & Clark, Ltd., Toronto

COMMERCIAL STATIONERY

- *Brown Bros., Ltd., Toronto.

CONCENTRATORS

- *Jenckes Machine Co., Sherbrooke, Que.

CONCRETE COATINGS, PAINTS, ETC.

- *Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

- The Imperial Varnish & Color Co., Limited, Toronto.

CONDUITS, fibre tubing

- *Beveridge Paper Co., Limited, Montreal.

CONDUITS FOR INTERIOR WIRING

*Conduits Company, Ltd., Toronto.

CONFECTIONERY

Ganong Bros., Ltd., St. Stephens, N.B.

Moirs, Limited, Halifax, N.S.

The Montreal Biscuit Co., Montreal, Que.

CONTAINER BOARD—strong container

Bathurst Lumber Co., Ltd., Bathurst, N.B.

CONTRACTORS' PLANT

*M. Beatty & Sons, Ltd., Welland, Ont.

CONVEYORS

*Canadian Link-Belt Co., Toronto.

*Canadian Mathews Gravity Carrier Co., Toronto.

*Dodge Mfg. Co., Ltd., Toronto.

*Jenckes Machine Co., Sherbrooke, Que.

COPPER

*Eugene F. Phillips, Electrical Works, Limited, Montreal.

*Booth-Coulter Copper & Brass Co., Limited, Toronto.

COPPER SHEETS AND PLATES

*Booth-Coulter Copper & Brass Co., Limited, Toronto.

*Tallman Brass & Metal Co., Hamilton, Ont.

COPPERSMITHS

*Booth-Coulter Copper & Brass Co., Limited, Toronto.

COPPER TUBING, seamless

Canadian Seamless Wire Co., Ltd., Toronto.

*Booth-Coulter Copper & Brass Co., Limited, Toronto.

COPPER WIRE

Canadian Seamless Wire Co., Ltd., Toronto.

CORKS

S. H. Ewing & Sons, Montreal, Que.

CORK CARPET

Dominion Oil Cloth Co., Ltd., Montreal, Que.

CORRUGATED PAPER BOXES

Adams Cellboard Co., Toronto.

*Hinde & Dauch Paper Co., Toronto.

*Martin Corrugated Paper & Box Co., Limited, Toronto.

*The Thompson & Norris Co. of Canada, Ltd., Niagara Falls, Ont.

CORUNDUM, artificial

*D. A. Brehner, Ltd., Toronto.

CORSETS

Dominion Corset Co., Quebec, Que.

COTTONS

*Dominion Textile Co., Limited, Montreal, Que.

*Montreal Cottons, Ltd., Valleyfield, P.Q.

COTTONADES

Hamilton Cotton Co., Hamilton, Ont.

COUPLERS

*Canadian Steel Foundries, Ltd., Welland, Ont.

COUPLINGS

*Canadian Bond Hanger & Coupling Co., Alexandria, Ont.

*Dodge Mfg. Co., Ltd., Toronto.

CRANES

*Northern Crane Works, Walkerville, Ont.

CRANKSHAFTS

Canada Forge Co., Ltd., Welland, Ont.

CREAM CHEESE, Ingersoll

The Ingersoll Packing Co., Limited, Ingersoll, Ont.

CREAM SEPARATORS AND MILK CLARIFIERS

De Laval Dairy Supply Co., Peterboro, Ont.

CREAMERY AND CHEESE FACTORY MACHINERY AND SUPPLIES

De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

CREOSOTED MATERIALS

*Paterson Mfg. Co., Toronto and Montreal.

CRUSHED STONE

The Hagersville Contracting Co., Limited, Hagersville, Ont.

CRUSHING ROLLS

*Jenckes Machine Co., Sherbrooke, Que.

CUPOLAS

*Sheldons, Ltd., Galt, Ont.

*Northern Crane Works, Limited, Walkerville, Ont.

CUPS, presentation

Standard Silver Co., Toronto.

CUPS, grease and oil

*The Canadian Winkley Co., Ltd., Windsor, Ont.

CURLED HAIR

*Delany and Pettit, Ltd., Toronto.

CURTAINS, chenille

Hamilton Cotton Co., Hamilton, Ont.

CUTLERY

Standard Silver Co., Toronto.

CUTTERS, (Machine)

*Pratt & Whitney Co., Dundas, Ont.

DENIMS

Hamilton Cotton Co., Hamilton, Ont.

DERAILS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

DESIGNERS

Ontario Engraving Co., Hamilton, Ont.

DESIGNERS and PRINTERS OF BOOKLETS, ETC.

Grip, Ltd., Toronto.

DESKS

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

DINING ROOM SUITES

The George McLagan Furniture Co., Limited, Stratford, Ont.

DIES

*Butterfield & Co., Rock Island, P.Q.

*Pratt & Whitney Co., Dundas, Ont.

DISINFECTING APPARATUS

Spramotor Co., London, Ont.

DOOR HANGERS

*Richards Wilcox Canadian Co., Ltd., London, Ont.

DRAPERY AND UPHOLSTERY GOODS

Daly & Morin, Montreal, Que.

DREDGES

*M. Beatty & Sons, Limited, Welland, Ont.

DRESSING, belt

Sadler & Haworth, Montreal, Que.

DRESS AND CLOAK TRIMMINGS

J. Henry Peters Co., 1 Mincing St., Toronto.

DRILLS

*John Morrow Screw & Nut Co., Limited, Ingersoll, Ont.

*Pratt & Whitney Co., Dundas, Ont.

DRILLS, rock

*Canadian Ingersoll Rand Co., Sherbrooke, Que.

*Jenckes Machine Co., Sherbrooke, Que.

DRIFT BOLTS OR SPIKES

London Rolling Mill Co., Limited, London, Ont.

DROP FORGINGS

*Canadian Billings & Spencer, Ltd., Welland, Ont.

DRUMS, steel, and containers

*Smart-Turner Machine Co., Ltd., Hamilton, Ont.

DRY CELLS, electric

Canadian Carbon Co., Limited, Toronto.

DRY COLORS

P. D. Dods & Co., Ltd., Montreal, Que.

The Imperial Varnish & Color Co., Limited, Toronto.

R. C. Jamieson & Co., Ltd., Montreal, Que.

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

DUMB WAITERS

Turnbull Elevator Mfg. Co., Toronto.

DURABLE WIRE ROPE

The Dominion Wire Rope Co., Ltd., Montreal, Que.

DYNAMITE

Canadian Explosives, Limited, Montreal, Que.

DYNAMOS

Consolidated Electric Co., Limited, Toronto.

*Jones & Moore Electric Co., Ltd., Toronto.

*The Canadian Crocker-Wheeler Co., Limited, St. Catharines, Ont.

DYNAMOS, plating

*Jones & Moore Electric Co., Ltd., Toronto.

EIDERDOWN

Galt Knitting Co., Ltd., Galt, Ont.

ELECTRIC APPLIANCES

*Canadian Crocker-Wheeler Co., Limited, St. Catharines, Ont.

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

ELECTRIC APPLIANCES, fibre, all purposes

*Beveridge Paper Co., Limited, Montreal.

ELECTRICAL COMPOUNDS

Standard Paint Co. of Canada, Ltd., Montreal, Que.

ELECTRICAL AND GAS FIXTURES

The Garth Co., Montreal, Que.

The James Morrison Brass Mfg. Co., Limited, Toronto.

*Tallman Brass and Metal Co., Hamilton, Ont.

ELECTRIC LAMPS

Packard Electric Co., Limited, Toronto.

ELECTRIC PLATE WARE

Roden Bros., Ltd., Toronto.

ELECTRIC BATTERIES

Canadian Carbon Co., Limited, Toronto.

ELECTROTYPING

Central Press Agency, Toronto.

ELECTRICAL SUPPLIES

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

*Jones & Moore Electric Co., Ltd., Toronto.

*Northern Electric Co., Limited, Montreal, Que.

ELECTRO-SILVER PLATED WARE

Standard Silver Co., Toronto.

ELEVATING MACHINERY

*Canadian Link-Belt Co., Toronto.

*Canadian Mathews Gravity Carrier Co., Toronto.

ELEVATORS

*Jenckes Machine Co., Sherbrooke, Que.

Turnbull Elevator Manufacturing Company, Toronto.

*The Waterous Engine Works Co., Ltd., Brantford, Ont.

*Northern Crane Works, Limited, Walkerville, Ont.

ELEVATORS FOR ALL PURPOSES

*The Waterous Engine Works Co., Limited, Brantford, Ont.

ELEVATOR GATES AND DOORS

Turnbull Elevator Mfg. Co., Ltd., Toronto.

ELEVATOR GUARDS

*The Geo. B. Meadows, Toronto Iron and Brass Goods Works Co., Limited, Toronto.

*Canada Wire and Iron Works, Hamilton, Ont.

ELEVATORS, hydraulic and electric

John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.

EMERY DRESSERS AND STANDS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

EMERY GRINDERS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

EMERY WHEELS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

EMERY WHEEL GUARDS

*Canadian Hart Wheels, Limited, Hamilton, Ont.

ENAMELS

R. C. Jamieson & Co., Limited, Montreal, Que.

ENAMEL MANUFACTURERS AND DECORATORS

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

ENAMEL AND TIN WARE

McClary Mfg. Co., London, Ont.

ENGINES

*E. Leonard & Sons, London, Ont.

*Goldie & McCulloch Co., Limited, Galt, Ont.

J. & R. Weir, Montreal, Que.

*Jenckes Machine Co., Sherbrooke, Que.

*Polson Iron Works, Limited, Toronto.

*Sheldons, Ltd., Galt, Ont.

*The Waterous Engine Works Co., Limited, Brantford, Ont.

ENGINES, gas and gasoline

*Goold-Shapley-Muir Co., Limited, Brantford, Ont.

*Massey-Harris Co., Ltd., Toronto.

ENGINES, gasoline, tractor, plowing and threshing

*Sawyer-Massey Co., Ltd., Hamilton, Ont.

ENGINES, hoisting

*M. Beatty & Sons, Welland, Ont.

*The Waterous Engine Works Co., Limited, Brantford, Ont.

ENGINES, steam plowing and threshing

Sawyer-Massey Co., Limited, Hamilton, Ont.

ENGRAVERS

Grip, Limited, Toronto.

Ontario Engraving Co., Hamilton, Ont.

Rolph & Clark, Limited, Toronto

Stone, Limited, Toronto.

ENGRAVERS, half-tone

Grip, Limited, Toronto.

Ontario Engraving Co., Hamilton, Ont.

ENGRAVERS, wood

Ontario Engraving Co., Hamilton, Ont.

ENGRAVERS AND PRINTERS steel plate

American Bank Note Co., Ottawa, Ont.

ENGRAVERS AND PRINTERS banknote

American Bank Note Co., Ottawa, Ont.

ENGRAVING

*J. L. Jones Engraving Company, Toronto.

ENGRAVING, copper and steel plate

Pritchard-Andrews Co. of Ottawa, Limited, Ottawa, Ont.

ENSILAGE AND STRAW CUTTERS

J. Fleury's Sons, Aurora, Ont.

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

ENVELOPES

Barber-Ellis Co., Ltd., Toronto.

Canada Envelope Co., Montreal, Que.

EXCELSIOR

*Delany & Pettit, Ltd., Toronto.

EXCELSIOR PADS

*Delany & Pettit, Ltd., Toronto.

Parmenter & Bulloch Co., Limited, Gananoque, Ont.

EXPERTS IN PATENT CAUSES

Ridout & Maybee, Toronto.

EXPLOSIVES, high

Canadian Explosives Ltd., Montreal, Que.

FACE PLATE JAWS

Ker & Goodwin, Brantford, Ont.

FACTORY SUPPLIES, cheese and creamery

De Laval Dairy Supply Co., Ltd., Montreal, Que.

J. Henry Peters Co., 1 Mincing St., Toronto.

FANS

*Sheldons, Limited, Galt, Ont.

FASTENERS, belt

*Sadler & Haworth, Montreal, Que.

FELTS, pulp and paper makers

Ayers Limited, Lachute Mills, P.Q.

*Beveridge Paper Co., Limited, Montreal.

FENCES AND GATES

*Dennis Wire & Iron Works Co., London, Ont.

*Canada Wire and Iron Works, Hamilton, Ont.

FENCING AND GATES, woven wire

Banwell-Hoxie Wire Fence Co., Hamilton, Ont.

*Canada Wire and Iron Goods Co., Hamilton, Ont.

FENCING, wire

C. H. Johnson & Sons, Limited, Montreal, Que.

FIBRE PAILS

*The E. B. Eddy Co., Ltd., Hull, Que.

FIBRE, VULCANIZED, hard and flexible

*Beveridge Paper Co., Limited, Montreal.

FIRE ENGINES

Limited, Brantford, Ont.
Works Co.,
Limited, Brantford, Ont.

FIRE ESCAPES

*Canada Wire and Iron Goods Co.,
Hamilton, Ont.
*Dennis Wire & Iron Works Co.,
London, Ont.

FIRE EXTINGUISHERS

*A. B. Ormsby Co., Ltd., Toronto.
*Booth-Coulter Copper and Brass
Co., Limited, Montreal, Que.
*The General Fire Equipment Co.,
Limited, Toronto, Ont.

FIRE FIGHTING APPARATUS

*The Watrous Engine Works Co.,
Limited, Brantford, Ont.

FIRE HOSE

*Canadian Consolidated Rubber
Co., of Canada, Limited, Montreal,
Que.
*Gutta Percha and Rubber, Ltd.,
Toronto.

FIRE PREVENTION MATERIAL

*Chicago Bridge & Iron Works,
Bridgeburg, Ont.
*Eureka Mineral Wool & Asbestos
Co., Toronto.
*The General Fire Equipment Co.,
Limited, Toronto.

**FIRE PROOF WINDOWS AND
DOORS**

*A. B. Ormsby Co., Ltd., Toronto.
*Pedlar People, Ltd., Oshawa, Ont.
*Trussed Concrete Steel Co. of
Canada, Limited, Walkerville, Ont.

FIRE SPRINKLER SYSTEMS

*Chicago Bridge & Iron Works,
Bridgeburg, Ont.
*The General Fire Equipment Co.,
Limited, Toronto.
*Purdy Mansell Co., Toronto.
*H. G. Vogel Co., Montreal, Que.

**FIRE AND WATER DEPARTMENT
SUPPLIES**

*Chicago Bridge & Iron Works,
Bridgeburg, Ont.
The Garth Co., Montreal, Que.

FISH, Atlantic Sea-Foods

Maritime Fish Corporation Ltd.,
Montreal, Que.

FITTINGS FOR SOIL PIPE

Anthes Foundry, Ltd., Toronto.

FITTINGS, steam

Warden King, Ltd., Montreal, Que.

FLAGS

*Scythes & Co., Limited, Toronto.

FLASHLIGHTS

Canadian Carbon Co., Toronto.

FLEXIBLE COUPLINGS

*Canadian Bond Hanger & Coup-
ling Co., Alexandria, Ont.

FLOORING, hardwood

Seaman Kent Co., Ltd., Meaford,
Ont.

FLUE LINERS

Standard Clay Products, Ltd., St.
Johns, Que.

FORGES

*Sheldons, Limited, Galt, Ont.

FORGINGS

Canada Forge Co., Ltd., Welland,
Ont.
*The Steel Co. of Canada, Limited,
Hamilton, Ont.

FORGINGS, drop

*Dominion Forge and Stamping
Co., Walkerville, Ont.

FOUNDRY EQUIPMENT

*Northern Crane Works, Limited,
Walkerville, Ont.

FOUNTAIN FRUITS and Juices

J. J. McLaughlin, Ltd., Toronto.

FRICITION CLUTCH PULLEYS

*Dodge Mfg. Co., Ltd., Toronto.

FROGS AND CROSSINGS,

manganese
Canadian Ramapo Iron Works, Ltd.,
Niagara Falls, Ont.

FUEL

Standard Fuel Co., Toronto.

**FUR GARMENTS, men's and
women's**

Holt, Renfrew, Ltd., Quebec.

FUR GOODS

John W. Peak & Co., Limited,
Montreal, Que.

**FUR TRIMMINGS, ornaments and
buttons**

J. Henry Peters Co., 1 Mincing St.,
Toronto.

FURNACES

McClary Mfg. Co., London, Ont.
The Jas. Smart Mfg. Co., Limited,
Brockville, Ont.

FURNACES, hot air

Bedford Stove Co., Bedford, Que.

FURNACES, oil burning

*Canadian Hoskins Co., Walkerv-
ville, Ont.
*Mechanical Engineering Works,
Montreal, Que.

FURNITURE, hall

The George McLagan Furniture Co.,
Limited, Stratford, Ont.

FURNITURE, office

The Canadian Office and School
Furniture Co., Ltd., Preston, Ont.

FURNITURE, reed and rattan

Imperial Rattan Co., Ltd., Strat-
ford, Ont.

FUSES

*Economy Fuse and Mfg. Co., Mon-
treal.

GALVANIZED IRON

*A. C. Leslie & Co., Montreal.

GALVANIZED SHEETS

*Dominion Sheet Metal Co., Ham-
ilton, Ont.

GALVANIZERS

Acme Stamping & Tool Works, Ltd.,
Hamilton, Ont.
*Ontario Wind Engine and Pump
Co., Limited, Toronto.

GASOLINE ENGINES

*Ontario Wind & Pump Co., Ltd.,
Toronto.
De Laval Dairy Supply Co., Ltd.,
Peterboro, Ont.

GASOLINE FIRE ENGINES

*The Watrous Engine Works Co.,
Ltd., Brantford, Ont.

GASOLINE MOTORS, "Imperial"

Marine
Bruce Stewart & Co., Ltd., Char-
lottetown, P.E.I.

GASOLINE, storage systems

*Steel Trough and Machine Co., Ltd.,
Tweed, Ont.

GASOLINE STORAGE SYSTEMS,

special underground
S. F. Bowser & Co., Toronto.

GASOLINE

*The Imperial Oil Co., Limited,
Toronto.

GEARS, cut

*Hamilton Gear & Machine, Toronto.

**GEARS, noiseless fibre, also rein-
forced**

*Beveridge Paper Co., Limited,
Montreal.

GENERATORS

*Canadian Crocker-Wheeler Co.,
Ltd., St. Catharines, Ont.
*Canadian Westinghouse Co., Ltd.,
Hamilton, Ont.

GINs

The Melchers Gin & Spirits Dis-
tillery Co., Ltd., Montreal, Que.

GLASSWARE

Dominion Glass Co., Limited, Mon-
treal, Que.

GLASSWARE, cut

Roden Bros., Ltd., Toronto.

GLASS FOR BUILDINGS

Toronto Plate Glass Importing Co.,
Limited, Toronto.

GLASS BENDERS

Toronto Plate Glass Importing Co.,
Limited, Toronto.

GLASS, mirror

Toronto Plate Glass Importing Co.,
Limited, Toronto.

GLOVES AND MITTS

*A. R. Clarke & Co., Ltd., Toronto.
Craig, Cowan Co., Ltd., Toronto.

GLUE

Canada Glue Co., Ltd., Brantford.
*Delany and Pettit, Ltd., Toronto.

**GOLD-FILLED WIRE AND
PLATE**

Canadian Seamless Wire Co., To-
ronto.

GOLD AND SILVER REFINERS

Canadian Seamless Wire Co., To-
ronto.

GRAIN CRUSHERS (Rapid Easy)

J. Fleury's Sons, Aurora, Ont.

GRAPE JUICE

J. J. McLaughlin, Ltd., Toronto.
The Welch Co., Ltd., St. Catharines.

GRATES

*The Goldie & McCulloch Co., Ltd.,
Galt, Ont.

GRAVITY CARRIERS

*Canadian Mathews Gravity Carrier
Co., Toronto.

GRILLES, metal

*Canada Wire & Iron Goods Co.,
Hamilton, Ont.
*Dennis Wire & Iron Works Co.,
London, Ont.

GRINDER, bench

*Canadian Bond Hanger & Coup-
ling Co., Alexandria, Ont.

GRINDERS, Pedestal and Bench

*Canadian Hart Wheels, Limited,
Hamilton, Ont.

GRINDING and Polishing Machinery

*Canadian Hart Wheels, Limited,
Hamilton, Ont.

GRINDING WHEELS

*Canadian Hart Wheels, Limited,
Hamilton, Ont.
*The Dominion Abrasive Wheel
Co., Limited, New Toronto.

GRINDSTONES

*Richards-Wilcox Canadian Co.,
Limited, London, Ont.

GUNN SECTIONAL BOOKCASES

The Geo. McLagan Furniture Co.,
Limited, Stratford, Ont.

GUY ANCHORS

B. J. Coghlin Co., Ltd., Montreal.

GYPSON, crushed

*Albert Mfg. Co., Hillsborough, N.B.

GYPSON PRODUCTS

*Manitoba Gypsum Co., Ltd., Win-
nipeg, Man.
De Laval Dairy Supply Co., Ltd.,
Peterboro, Ont.

HALL FURNITURE

The Geo. McLagan Furniture Co.,
Limited, Stratford, Ont.

HAMS

F. W. Fearman Co., Ltd., Hamil-
ton, Ont.

**HANDLES (Axe, pick, sledge ham-
mers, etc.)**

The Lachute Shuttle Co., Limited,
Lachute Mills, P.Q.

HANGERS

*Canadian Bond Hanger & Coup-
ling Co., Alexandria, Ont.
*Dodge Mfg. Co., Ltd., Toronto.

*The Goldie & McCulloch Co., Ltd.,
Galt, Ont.

HARDWARE

*Richards-Wilcox Canadian Co.,
Limited, London, Ont.
Taylor-Forbes Co., Limited, Guelph,
Ont.
The Jas. Smart Mfg. Co., Limited,
Brockville, Ont.

HARDWOOD FLOORING

Wilson Bros. Limited, Collingwood,
Onto.

HARDWOOD INTERIOR FINISH

Wilson Bros., Ltd., Collingwood,
Ont.

**HARDWOOD VENEER DOORS TO
DETAIL**

Wilson Bros., Ltd., Collingwood,
Ont.

HARNESS

Lamontagne Ltd., Montreal, Que.

HATS, men's straw

The Crown Hat Co., Limited, Galt,
Ont.

HATS, ladies' and children's straw

The Crown Hat Co., Limited, Galt,
Ont.

**HATS, ladies' and children's felt
and beaver**

The Crown Hat Co., Limited, Galt,
Ont.

HATS, ladies' felt and straw

Toronto Hat Mfg. Co., Toronto.

HAULAGE, Wire Rope

The Dominion Wire Rope Co., Ltd.,
Montreal, Que.

HEATERS

*Watrous Engine Works Co., Ltd.,
Brantford, Ont.

HEATERS, feed water

*Darling Bros., Ltd., Montreal.
*The Goldie & McCulloch Co., Ltd.,
Galt, Ont.

HEATING APPLIANCES

*C. A. Dunham Co., Ltd., Toronto.
*Darling Bros., Ltd., Montreal.

*Sheldons, Limited, Galt, Ont.

HEATING SYSTEMS

*C. A. Dunham Co., Ltd., Toronto.

HESSIANS

The Canadian Bag Co., Limited,
Montreal, Que.
*Scythes & Co., Limited, Toronto.

HINGES

*The Steel Co. of Canada, Limited,
Hamilton, Ont.

HOISTS

*M. Beatty & Sons, Ltd., Welland,
Ont.
*Northern Crane Works, Limited,
Walkerville, Ont.

HOISTS, electric and pneumatic

*M. Beatty & Sons, Ltd., Welland,
Ont.

*Northern Crane Works, Limited,
Walkerville, Ont.

HOISTING MACHINERY

*M. Beatty & Sons, Ltd., Welland,
Ont.
*Northern Crane Works, Limited,
Walkerville, Ont.

HOSE, fire

*Canadian Consolidated Rubber Co.,
Limited, Montreal, Que.
*Dunlop Tire & Rubber Goods Co.,
Ltd., Toronto.

*Gutta Percha & Rubber, Ltd.,
Toronto.

HOSE, half, Imperial

Kings-ton Hosiery Co., Ltd., King-
ston, Ont.

HOSE, rubber

*Canadian Consolidated Rubber Co.,
Limited, Montreal, Que.
*Gutta Percha & Rubber, Limited.

HYDRAULIC PRESSES

*Bawden Machine Co., Limited, To-
ronto.
*William R. Perrin, Ltd., Toronto.

ICE CREEPERS

Parmenter & Bulloch Co., Limited,
Gananouque, Ont.

ICE-MAKING MACHINERY

The Linde Canadian Refrigeration
Co., Limited, Montreal, Que.

INCUBATORS & BROODERS

Lee Mfg. Co., Ltd., Pembroke, Ont.

**INJECTORS, automatic and
autopositive**

Penberthy Injector Co., Limited,
Windsor, Ont.

INSULATING PAPER AND FIBRE

*Beveridge Paper Co., Limited,
Montreal.

INTERLOCKING RUBBER TILING

*Gutta Percha & Rubber Mfg. Co.,
of Toronto, Limited, Toronto.

INVERTS

Standard Clay Products, Ltd., St.
Johns, Que.

IRON

*Nova Scotia Steel & Coal Co., Ltd.,
New Glasgow, N.S.

IRON AND STEEL BARS

*The Steel Co. of Canada, Limited,
Hamilton, Ont.

IRON, refined bar

Starr Mfg. Co., Ltd., Dartmouth,
N.S.

IRON STAIRWAYS

*Canada Wire & Iron Goods Co.,
Hamilton, Ont.
*Dennis Wire & Iron Works Co.,
London, Ont.

IRONWORK, architectural

*Canada Wire & Iron Goods Co.,
Hamilton, Ont.

IRONWORK, ornamental

*Canada Wire & Iron Goods Co.,
Hamilton, Ont.

IRON, LEAD AND PUTTY

A. R. Whittall, Montreal, Que.

JAM, canned goods, etc.

E. D. Smith & Son, Limited.

JAPANS, enamels, etc.

A. Muirhead Co., Ltd., Toronto.

JOINTERS

*P. B. Yates Machine Co., Ltd.,
Hamilton, Ont.

JELLY POWDER

S. H. Ewing & Sons, Montreal
Que.

JOIST HANGERS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

KELSEY WARM AIR GENERATOR

The Jas. Smart Mfg. Co., Limited, Brockville, Ont.

KILNS

*Sheldons, Limited, Galt, Ont.

KINDLING

Standard Fuel Co., Toronto.

KNIFE GRINDERS

*W. H. Banfield & Sons, Toronto.

KNITTED GOODS

*Penman's, Limited, Paris, Ont.

KNIVES

Henry Disston and Sons, Toronto

The Peter Hay Knife Co., Limited, Galt, Ont.

Simonds Canada Saw Co., Limited, Montreal, Que.

KNIVES, pulp and paper

Henry Disston and Sons, Toronto.

The Peter Hay Knife Co., Limited, Galt, Ont.

KODAKS AND PHOTOGRAPHIC SUPPLIES

Canadian Kodak Co., Ltd., Toronto.

LABELS

Lawson & Jones, Ltd., London, Ont.

LABELS, lithographed

Harris Lithographing Co., Toronto.

LACE LEATHER

F. C. McCordick, St. Catharines, Ont.

*Sadler & Haworth, Montreal, Que.

*The D. K. McLaren Belting Co., Limited, Montreal, Que.

*The J. C. McLaren Belting Co., Limited, Montreal, Que.

LADDERS

Stratford Mfg. Co., Ltd., Stratford, Ont.

LADDERS, step.

*Otterville Mfg. Co., Ltd., Otterville, Ont.

LADLES, foundry

*Northern Crane Works, Limited, Walkerville, Ont.

LAGER

E. L. Drewry, Winnipeg, Man.

LARD

F. W. Fearman Co., Ltd., Hamilton, Ont.

LATH

The C. Beck Mfg. Co., Ltd., Penetanguishene, Ont.

LATHE CHUCKS

Ker & Goodwin, Brantford, Ont.

LATHE-DOGS

Canadian Billings & Spencer, Ltd., Welland, Ont.

LAUNCHES

Peterboro Canoe Co., Ltd., Peterboro, Ont.

LAWN MOWERS

Taylor-Forbes Co., Limited, Guelph, Ont.

LAWN SWINGS

Stratford Mfg. Co., Ltd., Stratford, Ont.

LAVATORIES, enameled

Amherst Foundry Co., Limited, Amherst, N.S.

LAUNDRY SINKS

Amherst Foundry Co., Limited, Amherst, N.S.

LEAD

*The Consolidated Mining and Smelting Co. of Canada, Limited, Trail, B.C.

LEAD GRINDERS

Benjamin Moore & Co., Limited, Toronto.

LEAD SHEET

Toronto Plate Glass Importing Co., Limited, Toronto.

LEAD PIPE

*The Steel Co. of Canada, Limited, Hamilton, Ont.

Toronto Plate Glass Importing Co., Limited, Toronto.

*The Canada Metal Co., Toronto.

LEATHER

The Robson Leather Co., Limited, Oshawa, Ont.

LEATHER, bookbinders'

Clarke & Clarke, Ltd., Toronto.

LEATHER, fancy

Clarke & Clarke, Ltd., Toronto.

LEATHER GOODS

Lamontagne, Ltd., Montreal, Que.

LEATHER, hemlock sole

The Breithaupt Leather Co., Ltd., Berlin, Ont.

LEATHER, patent colt and side leather

*A. R. Clarke & Co., Ltd., Toronto.

LEATHER, sheep skin, etc.

Clarke & Clarke, Ltd., Toronto.

LEATHER, upholstering

Clarke & Clarke, Ltd., Toronto.

LEATHER, upper

A. Davis & Son, Ltd., Kingston, Ont.

LINK BELT, Ewart, and sawmill riveted

*Canadian Link-Belt Co., Toronto.

LINK BELTING

*The Dodge Mfg. Co., Ltd., Toronto.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

LINOLEUM

Dominion Oil Cloth Co., Limited, Montreal, Que.

LITHOGRAPHED BUSINESS STATIONERY

Business Systems, Ltd., Toronto.

LITHOGRAPHED TIN WARE

*MacDonald Mfg. Co., Limited, Toronto.

LITHOGRAPHERS

American Bank Note Company, Ottawa, Ont.

Harris Lithographing Co., Toronto.

Stone, Limited, Toronto.

Rolph & Clark, Limited, Toronto.

LOCKERS

*Canada Wire & Iron Works Co., Hamilton, Ont.

*Dennis Wire & Iron Works Co., London, Ont.

*Geo. B. Meadows, Wire, Iron and Brass Works Co., Toronto.

LOCOMOTIVE BLOCKS

Standard Clay Products, Limited, St. Johns, Que.

LOCOMOTIVES, industrial

*Montreal Locomotive Works, Ltd., Montreal, Que.

LOCOMOTIVE & MARINE BRASS WORKS

The James Morrison Brass Mfg. Co., Limited, Toronto.

LOOSE LEAF, BINDERS AND FORMS

Business Systems, Ltd., Toronto.

LOOSE LEAF SYSTEMS

Copeland-Chatterton Co., Limited, Brampton, Ont.

LOOSE LEAF SUPPLIES

The Esdale Press, Ltd., Edmonton.

LUBRICATORS, steam sight feed

Penberthy Injector Co., Limited, Windsor, Ont.

LUGS, for silos and water tanks

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

*Otterville Mfg. Co., Ltd., Otterville, Ont.

LUMBER

*Brown Corporation, La Tuque, Que.

The C. Beck Mfg. Co., Ltd., Penetanguishene, Ont.

G. & J. Esplen, Montreal, Que.

LUMBER, asbestos

*Eureka Mineral Wool & Asbestos Co., Toronto.

LUMBER, spruce and pine, cedar

railway ties and shingles

Bathurst Lumber Co., Ltd., Bathurst, N.B.

LUMBERING BLANKETS

Slingsby Mfg. Co., Ltd., Brantford, Ont.

LUMBER, red pine and spruce

Gillies Bros., Ltd., Braeside, Ont.

LUMBER, spruce, fir, larch and cedar

Fernie Lumber Co., Ltd., Fernie, B.C.

LUMBER, white pine

Gillies Bros., Ltd., Braeside, Ont.

MACHINE TOOLS

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, conveying

*Canadian Link-Belt Co., Toronto.

*Canadian Mathews Gravity Carrier Co., Limited, Toronto.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

MACHINERY, flour mill

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

MACHINERY, grinding

*Canadian Hart Wheels, Limited, Hamilton, Ont.

MACHINERY, hoisting, etc.

*Polson Iron Works, Limited, Toronto.

J. & R. Weir, Montreal, Que.

*M. Beatty & Sons, Ltd., Welland, Ont.

*Northern Crane Works, Limited, Walkerville, Ont.

MACHINERY, ice cream

J. J. McLaughlin, Ltd., Toronto.

MACHINERY, iron working

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, pulp mill

*The Waterous Engine Works Co., Limited, Brantford, Ont.

MACHINERY, punching and shearing

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, railroad and car shop

*John Bertram & Sons Co., Ltd., Dundas, Ont.

MACHINERY, roadmaking

Sawyer-Massey Co., Limited, Hamilton, Ont.

*The Waterous Engine Works Co., Limited, Brantford, Ont.

MACHINERY, sawmill

The E. Long Mfg. Co., Limited, Orillia, Ont.

P. Payette & Co., Pentanguishene, Ont.

W. P. Plant, Hastings, Ont.

*The Waterous Engine Works Co., Limited, Brantford, Ont.

*Yates, P. B., Machine Co., Ltd., Hamilton, Ont.

MACHINERY, sheet metal working

Brown, Boggs Co., Ltd., Hamilton, Ont.

MACHINERY, special

Bawden Machine Co., Limited, Toronto.

MACHINERY, tannery

W. P. Plant, Hastings, Ont.

MACHINERY, transmission

*Dodge Mfg. Co., Ltd., Toronto.

*Goldie & McCulloch Co., Limited, Galt, Ont.

MACHINERY, woodworking

*Yates, P. B., Machine Co., Ltd., Hamilton, Ont.

Preston Woodworking Machinery Co., Ltd., Preston.

*The Waterous Engine Works Co., Limited, Brantford, Ont.

MACHINE WRENCHES

*Canadian Billings & Spencer, Ltd., Welland, Ont.

MACHINES, painting

Spramotor Co., London, Ont.

MAGNESITE

Canadian Carbonate Co., Limited, Montreal, Que.

MALT

*Hiram Walker & Sons, Limited, Walkerville, Ont.

MAPLE PRODUCTS

*Maples, Limited, Toronto.

MAPS AND MAP MOUNTING

The Geo. M. Hendry Co., Limited, Toronto.

Stone, Limited, Toronto.

MARTINGALE RINGS AND SLIDE LOOPS

The Arlington Co. of Canada, Ltd., Toronto.

MATCHERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

MATCHES

*The E. B. Eddy Co., Ltd., Hull.

MECHANICAL STOKERS

*The Jones Underfeed Stoker Co., Ltd., Toronto.

MEDICINES, patented and pharmaceutical

Dr. Ed. Morin & Cie., Ltd., Quebec.

METAL, babbitt

*Canada Metal Co., Toronto.

*Tallman Brass and Metal Co., Hamilton, Ont.

Alonzo W. Spooner, Limited, Port Hope, Ont.

METAL CEILING

*Metallic Roofing Co., Limited, Toronto.

METAL LATH

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

METAL PACKING

*Garlock Packing Company, Hamilton, Ont.

METAL, spinning and stamping

The Booth-Coulter Copper and Brass Co., Limited, Toronto.

METAL SHINGLES

*The Metallic Roofing Co. of Canada, Limited, Toronto.

METAL SIDING

*The Metallic Roofing Co., Ltd., Toronto.

MILK DEALERS' MACHINERY AND SUPPLIES

De Laval Dairy Supply Co., Ltd., Peterboro, Ont.

MILLBOARD, asbestos

*Eureka Mineral Wool & Asbestos Co., Toronto.

MILLING CUTTERS

Pratt and Whitney Company of Canada, Dundas, Ont.

MITTS AND GLOVES (Indian, tan, red deerskins)

Holt, Renfrew Ltd., Quebec, Que.

A. R. Clarke & Co., Ltd., Toronto.

MOCCASINS AND SLIPPERS (Indian tanned leathers)

Holt, Renfrew Ltd., Quebec, Que.

MORTISERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

MOTOR CARS

*Ford Co. of Canada, Ford, Ont.

*Willys-Overland, Ltd., West Toronto.

MOTORS, electric (alternating current)

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

Consolidated Electric Co., Limited, Toronto.

*Jones & Moore Electric Co., Ltd., Toronto.

*Canadian Crocker-Wheeler Co., Ltd., St. Catharines, Ont.

*T. & H. Electric Co., Hamilton.

MOTORS, electric (direct current)

*Canadian Westinghouse Co., Ltd., Hamilton, Ont.

Consolidated Electric Co., Limited, Toronto.

*Jones & Moore Electric Co., Ltd., Toronto.

*T. & H. Electric Co., Hamilton.

MOTORS, electric (repairing)

Consolidated Electric Co., Limited, Toronto.

*T. & H. Electric Co., Hamilton.

MOULDERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

NAILS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

NAILS, copper

Parmenter and Bulloch Co., Ltd., Gananoque, Ont.

NAILS, wire

Parmenter and Bulloch Co., Ltd., Gananoque, Ont.

The Graham Nail Works, Toronto.

NAPHTHA

*The Imperial Oil Co., Limited, Toronto.

NICKEL OXIDE

Coniagas Reduction Co., Limited, St. Catharines, Ont.

NUTS

*John Morrow Screw & Nut Co., Limited, Ingersoll, Ont.

*The National Acme Mfg. Co., Montreal, Que.

*The Steel Co. of Canada, Limited, Hamilton, Ont.

OAKUM, plumbers, Canadian Navy

OAT CRUSHERS AND FLAKERS
J. Fleury's Sons, Aurora, Ont.

OFFICE DESKS

*Goderich Organ Co., Goderich, Ont.

OFFICE EQUIPMENT

*Office Specialty Co., Newmarket, Ont.

OFFICE FURNITURE

*Office Specialty Mfg. Co., Ltd., Newmarket, Ont.

OILS

Brandram-Henderson, Ltd., Montreal, Que.

A. Ramsay & Son Co., Montreal, Que.

Sherwin-Williams Co. of Canada, Limited, Montreal, Que.

OIL FILTRATION AND CIRCULATING SYSTEMS

S. F. Bowser & Co., Toronto.

OIL STORAGE SYSTEMS, self-measuring

S. F. Bowser & Co., Toronto.

OIL COMPANIES

*Canadian Oil Cos., Toronto.

Commercial Oil Co., Ltd., Hamilton, Ont.

*Imperial Oil Co., Toronto.

OILS (Petroleum products)

*British American Oil Co., Limited, Toronto.

*The Imperial Oil Co., Limited, Toronto.

OILS, road

*Paterson Manufacturing Company, Toronto and Montreal.

OILCLOTHS, floor and table

Dominion Oil Cloth Co., Limited, Montreal, Que.

ORGANS

*Goderich Organ Co., Goderich, Ont.

Karn-Morris Piano and Organ Co., Ltd., Woodstock, Ont.

Thomas Organ & Piano Co., Woodstock, Ont.

ORGANS, pipe

Casavant Freres, St. Hyacinthe, Que.

Karn-Morris Piano and Organ Co., Ltd., Woodstock, Ont.

ORGANS, parlor

*Goderich Organ Co., Goderich, Ont.

ORNAMENTAL IRON WORK

*Canada Wire & Iron Goods Co., Hamilton, Ont.

*Dennis Wire & Iron Works Co., London, Ont.

*The Geo. B. Meadows, Toronto Iron and Brass Goods Works Co., Limited, Toronto.

OVENS, portable bake

Bedford Stove Co., Bedford, Que.

Mackenzie & Co., Ottawa, Ont.

Peerless Overall Co., Rock Island, Que.

Walker Pant and Shirt Co., Walkerville and Chatham, Ont.

The Standard Shirt Co., Limited, Montreal, Que.

OVERCOATINGS

Rosamond Woollen Co., Almonte, Ont.

OVERHEAD RUNWAYS

*Richards-Wilcox Canadian Co., Limited, London, Ont.

OXY-ACETYLENE WELDING

*L'Air Liquide Society, Montreal.

OXYGEN

*L'Air Liquide Society, Montreal.

PACKING BOXES

Barchard & Co., Limited, Toronto.

PACKING, engine

*Garlock Packing Co., Hamilton.

PACKERS, parchment papers, discs, shavings

*Beveridge Paper Co., Limited, Montreal.

PACKING, rubber

*Canadian Consolidated Rubber Co., Limited, Montreal, Que.

*Gutta Percha & Rubber, Limited, Jenkins Bros., Ltd., Montreal, Que.

PAIS AND TUBS, wooden

The C. Beck Mfg. Co., Limited, Penetanguishene, Ont.

PAINTERS' SUPPLIES

A. Muirhead Co., Ltd., Toronto.

PAINTS

R. C. Jamieson & Co., Limited, Montreal, Que.

PAINTS and VARNISHES

A. Muirhead Co., Ltd., Toronto.

Benjamin Moore & Co., Limited, Toronto.

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

The Imperial Varnish & Color Co., Limited, Toronto.

The Staneland Co., Ltd., Victoria, B.C.

A. Ramsay & Sons Co., Montreal, Que.

*The Dougall Varnish Co., Limited, Montreal, Que.

Standard Paint Co. of Canada, Limited, Montreal, Que.

*Toch Bros., Toronto.

PAINTS, barn and bridge

Standard Paint & Varnish Co., Ltd., Windsor, Ont.

PAINTS, preservative

Standard Paint Co. of Canada, Limited, Montreal, Que.

*Paterson Manufacturing Company, Toronto and Montreal.

*Toch Bros., Toronto.

PAPER BAGS

*Beveridge Paper Co., Limited, Montreal.

PAPER, book

Barber Paper & Coating Mills, Ltd., Georgetown, Ont.

PAPER BOXES

King Paper Box Co., Ltd., Montreal, Que.

*Rudd Paper Box Co., Limited, Toronto.

PAPER, coated, book and label

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, coated box board

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, coated cover

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, envelope

Provincial Paper Mills Limited, Georgetown, Ont.

The Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER, enamelled blotting

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, gummed tapes

Gummed Papers, Ltd., Brampton, Ont.

PAPER, kraft and all wrappings, printings and specialties

*Beveridge Paper Co., Limited, Montreal.

PAPER, label

*Provincial Paper Mills, Limited, Georgetown, Ont.

PAPER, ledger

*Howard Smith Paper Mills, Ltd., Montreal.

*Rolland Paper Co., Limited, Montreal, Que.

The Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER, news

*The Riordon Pulp and Paper Co., Montreal, Que.

PAPER, super-book

The Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER, wall

Stauntons, Ltd., Toronto.

PAPER, Waxed

Business Systems, Ltd., Toronto.

PAPER, wrapping, printing and specialties

*Beveridge Paper Co., Ltd., Montreal.

*The Riordon Pulp and Paper Co., Montreal, Que.

PAPER, writing

The Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER, writing, high-grade

*Howard Smith Paper Mills, Ltd., Montreal.

*Rolland Paper Co., Limited, Montreal, Que.

PAPERS, bond

*Howard Smith Paper Mills, Ltd., Montreal.

*Rolland Paper Co., Ltd., Montreal, Que.

PAPERS, building

Bathurst Lumber Co., Ltd., Bathurst, N.B.

*The Riordon Pulp and Paper Co., Montreal, Que.

Standard Paint Co. of Canada, Ltd., Montreal, Que.

PARK SEATS

Stratford Mfg. Co., Ltd., Stratford, Ont.

PARLOR SUNDRIES

The Geo. McLagan Furniture Co., Limited, Stratford, Ont.

PATENTS

Fetherstonhaugh & Co., Toronto.

Ridout and Maybee, Toronto.

PATENT LITIGATION

Ridout and Maybee, Toronto.

PAY ROLL AUDITS

*International Time Recording Co. of Canada, Ltd., Toronto.

PEAS AND BEANS FOR SEED

W. P. Niles, Ltd., Wellington, Ont.

PERFORATED METALS

*Canada Wire & Iron Goods Co., Hamilton, Ont.

PERFORATED MUSIC ROLLS

The Otto Higel Co., Ltd., Toronto.

PERFUMES AND TOILET PREPARATIONS

Sovereign Perfumes Ltd., Toronto.

PETROLEUM PRODUCTS

*The Imperial Oil Co., Limited, Toronto.

PHOTOMAILERS

*The Thompson & Norris Co. of Canada, Ltd., Niagara Falls, Ont.

PIANOS

Dominion Organ & Piano Co., Ltd., Bowmanville, Ont.

*Gourlay, Winter and Leeming, Toronto.

Karn-Morris Piano and Organ Co., Limited, Woodstock, Ont.

PIANO ACTIONS

The Otto Higel Co., Ltd., Toronto.

PIANO KEYS

The Otto Higel Co., Ltd., Toronto.

PIANOS, player

*Gourlay, Winter and Leeming, Toronto.

Karn-Morris Piano and Organ Co., Limited, Woodstock, Ont.

PIANO PLAYER ACTIONS

The Otto Higel Co., Ltd., Toronto.

PIANO STOOLS and BENCHES

*Goderich Organ Co., Goderich, Ont.

PICKLES AND CATSUPS

T. A. Lytle Co., Ltd., Toronto.

PIG IRON

*The Steel Co. of Canada, Limited, Hamilton, Ont.

PINE DOORS, SASH, MOULDINGS, ETC.

Wilson Bros., Limited, Collingwood, Ont.

PINS, society, emblems and badges

Caron Bros., Montreal, Que.

PIPE, cast iron, for water and gas

National Iron Works, Ltd., Toronto.

PIPE COUPLINGS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

PIPE COVERINGS

*Eureka Mineral Wood & Asbestos Co., Toronto.

PIPE ORGANS

Karn-Morris Piano and Organ Co., Limited, Woodstock, Ont.

PIPES, culvert

Standard Clay Products, Ltd., St. Johns, Que.

PIPE AND NIPPLE, black and galvanized

*Canadian Tube & Iron Co., Ltd., Montreal, Que.

PIPE, sewer

Hamilton and Toronto Sewer Pipe Co., Limited, Hamilton, Ont.

Standard Clay Products, Ltd., St. Johns, Que.

PIPE, soil and fittings

Authes Foundry, Ltd., Toronto and Winnipeg.

Warden King Lt., Montreal, Que.

PIPE AND TUBES, wrought

*Page-Hersey Iron Tube and Lead Co., Ltd., Toronto.

PIPE, threading and cutting off machines

John H. Hall & Sons, Limited, Brantford, Ont.

PISTON RODS

*The Canadian Drawn Steel Co., Limited, Hamilton, Ont.

*Union Drawn Steel Co., Limited, Hamilton, Ont.

PLANERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

PLANING MILLS

G. & J. Esplen, Montreal, Que.

PLOWS

J. Fleury's Sons, Aurora, Ont.

PLUMBERS' SUPPLIES

The Garth Co., Montreal, Que.

The James Morrison Brass Mfg. Co., Ltd., Toronto.

PLUMBING APPLIANCES

Standard Sanitary Mfg. Co., Ltd., Limited, Toronto.

PLUMBING SUPPLIES

Toronto Plate Glass Importing Co., Limited, Toronto.

PNEUMATIC MACHINERY

*Canadian Ingersoll-Rand Co., Sherbrooke, P.Q.

POLE LINE MATERIAL (wooden insulator top pins, side blocks, pole steps, cross arms)

The Lachute Shuttle Co., Limited, Lachute Mills, P.Q.

POLES, curtain

Daly & Morin, Montreal, Que.

POLES, Flag

*Ontario Wind Engine & Pump Co., Ltd., Toronto.

POLES, telegraph and telephone, cedar

Fernie Lumber Co., Ltd., Fernie, B.C.

PORK PACKERS AND CHEESE EXPORTERS

The Ingersoll Packing Co., Limited, Ingersoll, Ont.

POSTS, split cedar fence

Fernie Lumber Co., Ltd., Fernie, B.C.

POSTERS

Stone, Limited, Toronto.

POULTRY SUPPLIES AND MEDICINES

Lee Mfg. Co., Ltd., Pembroke, Ont.

POWDER, blasting

Canadian Explosives, Ltd., Montreal, Que.

POWER PRESSES

*Canadian Boomer & Boschert Press Co., Limited, Montreal, Que.

*William R. Perrin, Ltd., Toronto.

PRESERVATIVE PAINT

*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

PRESERVATIVE PAINT FOR BOILERS

*Beveridge Paper Co., Limited, Montreal.

PRESSES, baling and filter

*Canadian Boomer & Boschert Press Co., Ltd., Montreal, Que.

*William R. Perrin, Ltd., Toronto.

PRESSES, hydraulic

*Canadian Boomer & Boschert Press Co., Limited, Montreal, Que.

PRESSES, sheet metal stamping

Brown, Boggs Co., Ltd., Hamilton, Ont.

PRESSES, veneer

*William R. Perrin, Ltd., Toronto.
*Canadian Boomer & Boschert Press Co., Ltd., Montreal, Que.

PRINTERS

Rous & Mann, Ltd., Toronto.
R. G. McLean, Toronto.

PRINTERS, catalogue

R. G. McLean, Toronto.

PRINTING AND LITHOGRAPHING

Lawson & Jones, Limited, London, Ont.

PULLEYS

*Canadian Bond Hanger & Coupling Co., Alexandria, Ont.
*Dodge Mfg. Co., Ltd., Toronto.
*The Goldie & McCulloch Co., Ltd., Galt, Ont.

PULP, bleached sulphite

The Edward Partington Pulp and Paper Co., St. John, N.B.

PULP, sulphate and sulphite

Bathurst Lumber Co., Ltd., Bathurst, N.B.

PULP

*Brown Corporation, La Tuque, Que.

PUMPS

*Bawden Machine Co., Ltd., Toronto.
*Canadian Fairbanks-Morse Company, Limited, Montreal, Que.
*Darling Bros., Ltd., Montreal.
*Ontario Wind Engine & Pump Co., Ltd., Toronto.
*Smart-Turner Machine Co., Ltd., Hamilton, Ont.
*Spiramotor Co., London, Ont.

PUMPS, boiler feed

*Bawden Machine Co., Ltd., Toronto.
*Smart-Turner Machine Co., Ltd., Hamilton, Ont.
*The Goldie & McCulloch Co., Ltd., Galt, Ont.

PUMPS, centrifugal

*M. Beatty & Sons, Ltd., Welland, Ont.
*Smart-Turner Machine Co., Ltd., Hamilton, Ont.
*Waterous Engine Works Co., Ltd., Brantford, Ont.

PUMPS, iron

*Goold-Shapley-Muir Co., Limited, Brantford, Ont.
*Smart-Turner Machine Co., Ltd., Hamilton, Ont.
*Waterous Engine Works Co., Ltd., Brantford, Ont.

PUMPS, turbine and reciprocating

*Bawden Machine Co., Ltd., Toronto.
*Smart-Turner Machine Co., Ltd., Hamilton, Ont.
John McDougall, Caledonian Iron Works Co., Ltd., Montreal, Que.

PUNCHES

*Pratt & Whitney Co., Dundas.

PYROMETERS

*Canadian Hoskins Co., Walkerville, Ont.

RADIATORS

Taylor-Forbes Co., Limited, Guelph, Ont.
Warden King, Ltd., Montreal, Que.

RAILINGS, brass and iron

*Dennis Wire & Iron Works Co., London, Ont.

RAILS, light

Hamman Steel Car and Engineering Works, Hamilton.

RAILWAY SIGNAL APPLIANCES

General Railway Signal Co. of Canada, Ltd., Montreal, Que.

RAILWAY SUPPLIES

*Canadian Steel Foundries, Ltd., Montreal, Que.
*Chicago Bridge & Iron Works, Bridgeburg, Ont.
B. J. Coghlin Co., Ltd., Montreal, Que.

RAILWAY TARIFF BINDERS

The Esdale Press Ltd., Edmonton.

READY-TO-WEAR GARMENTS, LADIES'

H. C. Boulter Co., Ltd., Toronto.

REAMERS

*Pratt & Whitney Co., Dundas.
*Butterfield & Co., Rock Island, P.Q.
"REDWOOD" lager
E. L. Drewry, Winnipeg, Man.

REED AND RATTAN GOODS

Canada Furniture Mfgs., Limited, Woodstock, Ont.

REFRIGERATORS

Sanderson-Harold Co., Ltd., Paris, Ont.
Lee Mfg. Co., Ltd., Pembroke, Ont.

REFRIGERATING MACHINERY

The Linde Canadian Refrigeration Co., Ltd., Montreal, Que.

REFRIGERATORS, store, homes

Ham & Nott Co., Ltd., Brantford, Ont.
John Hillock & Co., Ltd., Toronto.

REINFORCEMENT BARS

*The Steel Co. of Canada, Limited, Hamilton, Ont.

REINFORCEMENT FOR CONCRETE

*Canada Wire & Iron Goods Co., Hamilton, Ont.
*Trussed Concrete Steel Co. of Canada, Limited, Walkerville, Ont.

REVOLVING DOORS

*A. B. Ormsby Co., Ltd., Toronto.

RINGS, gold

Caron Bros., Montreal, Que.

RIVETS

*Canadian Tube & Iron Co., Ltd., Hamilton, Ont.
*The Steel Co. of Canada, Limited, Hamilton, Ont.

RIVETS, bifurcated and tubular

Parmenter & Bulloch Co., Limited, Gananoque, Ont.

RIVETS AND BURS, iron, copper and brass

Parmenter & Bulloch Co., Limited, Gananoque, Ont.

ROLLERS, shade

Daly & Morin, Montreal, Que.

ROOFING, metal

*Metallic Roofing Co., Limited, Toronto.

ROOFING, ready to lay

Standard Paint Co. of Canada, Ltd., Montreal, Que.
*Paterson Mfg. Co., Toronto and Montreal.

ROOF TRUSSES

*The Canadian Bridge Co., Ltd., Walkerville, Ont.
*Dominion Bridge Co., Ltd., Montreal, Que.

ROPE

*Doon Twines Ltd., Doon, Ont.
*Shurly & Derrett, Ltd., Toronto.

ROPE, cotton

Hamilton Cotton Co., Hamilton, Ont.

RUBBER FOOTWEAR

Ames Holden, McCready, Limited, Montreal, Que.
*Gutta Percha & Rubber, Ltd.
The Miner Rubber Co., Limited, Granby, Que.

RUBBER GOODS

*Canadian Consolidated Rubber Co., Limited, Montreal, Que.
*Dunlop Tire & Rubber Goods Co., Ltd., Toronto.
*Gutta Percha & Rubber, Ltd.

RUBBER MOULDS

Bawden Machine Co., Ltd., Toronto.

RUBBER PACKING

*Dunlop Tire & Rubber Goods Co., Ltd., Toronto.
*Garlock Packing Company, Hamilton, Ont.

RULES

The Lufkin Rule Co. of Canada, Ltd., Windsor, Ont.

RYE

The St. Hyacinthe Distillery Co., Ltd., St. Hyacinthe, Que.

SADDLERY HARDWARE

*Dominion Forge and Stamping Co., Walkerville, Ont.

SAFES

*Goldie & McCulloch Co., Limited, Galt, Ont.

SAMPLE CASES

The M. Langmuir Mfg. Co. of Toronto, Ltd., Toronto.
J. Eveleigh & Co., Ltd., Montreal, Que.

SANDERS

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.

SANDPAPER

*Delany and Pettit, Ltd., Toronto.

SASH CORD, cotton

Hamilton Cotton Co., Hamilton, Ont.

SALT

Canadian Salt Co., Ltd., Windsor, Ont.
The Dominion Salt Co., Limited, Sarnia, Ont.

SANITARY PAPER TOWELS

*E. B. Eddy Co., Ltd., Hull, Que.

SAW SHARPENING MACHINERY

*Canadian Hart Wheels, Limited, Hamilton, Ont.

SAWS

Henry Disston & Sons, Limited, Toronto.
Shurly & Deitrich, Galt, Ont.

SAWS, crosscut and band

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.
Shurly & Deitrich, Galt, Ont.

SAWS, circular mill

Shurly & Deitrich, Galt, Ont.

SAWS, hack

*Victor Saw Works, Ltd., Hamilton, Ont.

SAWS, of all kinds

Simonds Canada Saw Co., Limited, Montreal, Que.

SAWS, rip

*P. B. Yates Machine Co., Ltd., Hamilton, Ont.
Shurly & Deitrich, Galt, Ont.

SAWMILLS

G. & J. Esplen, Montreal, Que.
*The Waterous Engine Works Co., Ltd., Brantford, Ont.

SAWS, specialties

*Victor Saw Works, Ltd., Hamilton, Ont.

SCALES

The Gurney Scale Co., Hamilton, Ont.

SCALES, counter

The Gurney Scale Co., Hamilton, Ont.

SCALES, railway track, etc.

The Gurney Scale Co., Hamilton, Ont.

SCREENS

*Canada Wire & Iron Goods Co., Hamilton, Ont.

SCREEN DOORS AND WINDOWS

Sanderson-Harold Co., Ltd., Paris, Ont.
Ham & Nott Co., Ltd., Brantford, Ont.

SCREWS

*John Morrow Screw & Nut Co., Ltd., Ingersoll, Ont.
*The National Acme Mfg. Co., Montreal, Que.
*The Steel Co. of Canada, Limited, Hamilton, Ont.

SCREW PLATES

*Butterfield & Co., Rock Island, P.Q.

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American Bank Note Co., Ottawa, Ont.

SERGES

Rosamond Woollen Co., Almonte, Ont.

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Canada Forge Co., Ltd., Welland, Ont.

*Canadian Bond Hanger & Coupling Co., Alexandria, Ont.

*Canadian Drawn Steel Co., Ltd., Hamilton, Ont.

*The Goldie & McCulloch Co., Ltd., Galt, Ont.

*Union Drawn Steel Co., Limited, Hamilton, Ont.

*Dodge Mfg. Co., Ltd., Toronto.

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Slingsby Mfg. Co., Ltd., Brantford, Ont.

SHAPERS

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SKATES, genuine Acme

Canada Cycle and Motor Co., Ltd., Toronto.

SKATES, hockey

Canada Cycle and Motor Co., Ltd., Toronto.

SKATES, ice

Canada Cycle and Motor Co., Ltd., Toronto.

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*Canadian Bond Hanger & Coupling Co., Alexandria, Ont.

SKIFFS

Peterboro Canoe Co., Ltd., Peterboro, Ont.

SKYLIGHTS

*A. B. Ormsby Co., Ltd., Toronto.
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Tudhope-Anderson Co., Limited, Orillia, Ont.

SLIPPERS

Ames-Holden-McCready, Ltd., Montreal, Que.

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*Dominion Bridge Co., Ltd., Montreal.

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*Canadian Steel Foundries, Ltd., Montreal, Que.

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*Gutta Percha & Rubber, Ltd.

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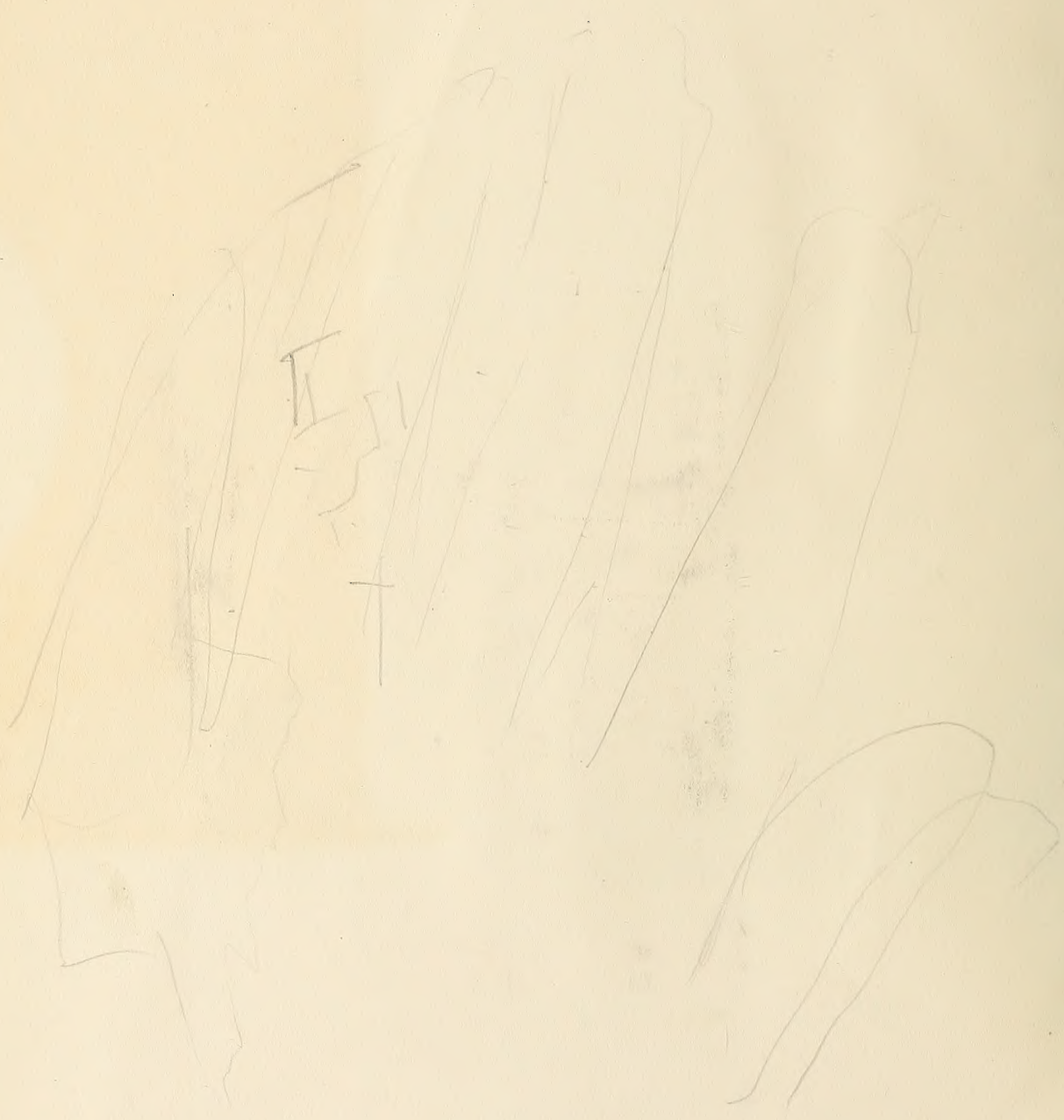
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